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## STRAIN MEASUREMENTS OF BRICK PAVEMENTS

### Physical Tests of Brick Pavements—Effects of Street Cars and of Temperature Variations—Measurable Depression Ten Feet from Track—Transverse and Longitudinal Cracks

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A MATERIAL of superior properties for street pavements is present in the vitrified paving brick of current manufacture. Such excellent qualities have been reached that attention is necessarily attracted by this valuable clay product. The manufacturers of paving brick have done their part in a commendable manner and produced a paving material which has a crushing strength comparing well with strong natural stone, and which exceeds that of many varieties.

A well made paving brick possesses high resistance against abrasion, it is nearly impervious to moisture, in which respect it presents an important sanitary advantage, and furthermore it is attractive in appearance and beautifies a city where it is used.

The mechanical features of manufacture are under such control that regularity of form is secured and with that follows the opportunity of securing a pavement with an even surface, a feature of decided economic importance considering its bearing on the tractive force required for transportation purposes. The necessary material for manufacture seems favorably distributed in many States. From the manufacturing end the problem of producing a satisfactory paving material has been well solved.

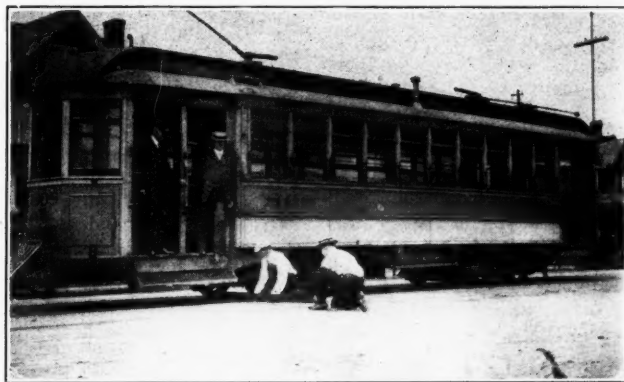
The question now appears to be an engineering one to ascertain the manner in which the useful properties of paving brick can best be availed of. The engineering side of the question, however, is a broad one directly concerning the welfare of many communities.

The Bureau of Standards in the performance of its regular functions pertaining to investigative tests of structural materials has inaugurated tests on paving brick in place in the pavements. Laboratory tests on the properties of brick have been carefully made many times and in many places, the results of which are familiar to all. The present tests are intended to extend information to the behavior of the brick as found under service conditions, measuring the strains which are developed in the pavements themselves and from the deformations judge of the stresses or loads which are involved.

Conditions in a pavement are complicated, and in ap-

proaching the subject it is essential to make a careful analysis of the case, ascertain and define what the elementary features consist of and so shape the work that one feature after another may be taken up and investigated. Notwithstanding the apparent complexity of the subject it nevertheless admits of being resolved into elementary factors and each in sequence made the object of experimental inquiry.

Some preliminary work was done a year ago at Indianapolis. It has since been extended at Cleveland, during which the bureau has had the co-operation and aid of Mr. Will P. Blair, secretary, and other members of the National Paving Brick Manufacturers' Association, also officials of the cities of Cleveland, East Cleveland and Lakewood.



MEASURING DEPRESSION OF TRACK UNDER WEIGHT OF TROLLEY CAR, CLEVELAND.

The work in those cities has been directed toward acquiring data upon the relations of the street car tracks to the pavement and upon the effect of variations in temperature in stressing the pavement. These questions are quite distinct from those which relate to the supporting capacity of pavements against heavy wheel loads, or durability in the matter of wear or surface abrasion. So many streets furnish successful examples of pavements which have car-

ried heavy traffic for a term of years that it was not thought necessary to include such observations at this time.

The tests on the relations of the street car tracks to the pavements consisted of measuring the elastic depression of the track under the weights of cars and acquiring information on its influence on the adjacent pavement. The elastic depressions of the rails were measured on different types of tracks, selecting among the number places where maximum rigidity was likely to prevail.

In general it was found that the vertical elastic movement of street car tracks, that is the difference in level of the rails between a loaded and an unloaded state is greater than can be followed by a monolithic pavement without the formation of cracks alongside the track. Occasionally track in the very best condition may not display excessive depression, but the uncertainty of maintaining

such a state renders it hazardous to make a bond between the pavement and the track.

There is in addition to the momentary elastic depression a bodily settlement of the track resulting from insufficient support of the roadbed. Such settlement when it occurs involves a permanent depression altogether too great to consider in connection with those lesser movements which we are now describing. The bodily settlement of the car track, however, is a feature which cannot be left unmentioned. Cases are so flagrant at times that a good pavement can hardly be made use of by reason of the ruts of the trolley tracks.

In these tests the sensitive leveling apparatus employed in the observations was such that the presence of a trolley car could be detected by the depression which it caused even in the pavement at a distance of ten feet from the track in the direction of the sidewalk. Such an observation was made on a relaid pavement in which a tar filler had been used, and substantially at that distance with a cement filler, or from 10 to 12 feet away.

At the intersection of two streets, where no trolley tracks were present, the depression caused by the weight of a man was detected at a distance of 12 feet. This observation was made at a place where the hollow rumbling sounds of passing vehicles indicated the pavement did not rest upon the sand cushion or foundation. It was noticed that the pavement at the crown of the street responded more promptly in respect to change of level to a load coming upon it from the side rather than along the center line of the street.

Pavements are elastic as the properties of the individual brick and the cement filler would indicate, but the amount of transverse bending which a brick or a cement grouted pavement will endure without cracking is very limited in its extent. This is particularly the case when the material is strained in tension. A wider elastic range prevails for compression loads, substantially in the ratio of the compressive to the tensile strengths, or from ten to one or more.

Concerning the effects of changes in temperature on the integrity of pavements, data were acquired by the method of strain measurements, a description of which method was presented at your last annual meeting. Gauged lengths of 20 inches each were established in the pavement, in number exceeding 300. It has been found feasible to measure these gauged lengths with an accuracy, commonly to the nearest ten thousandth of an inch. In this manner thermal changes may be followed very closely.

Gauged lengths were located at the sides and at the middle of the street, in both crosswise and longitudinal directions. During the time in which these strain measurements have been in progress a range of pavement temperatures of 66 degrees F. has been experienced. Figure No. 1 illustrates some of the results which have been ob-

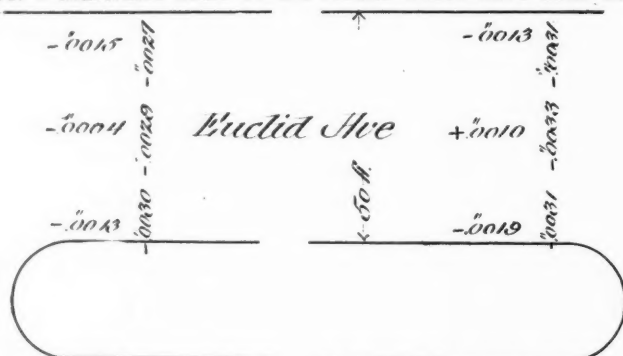


FIG. 1. MEASURED CONTRACTIONS OF PAVEMENT, DUE TO A DROP IN TEMPERATURE OF 66° F., ON 20-INCH GAUGED LENGTHS. (One length showed extension.)

tained, those here entered referring to measurements on Euclid avenue, on a section of the pavement just east of University Circle, Cleveland.

In general the expansions or contractions of the cross-

wise gauged lengths proceeded with greater regularity than the longitudinal movements. Modifying conditions influenced the longitudinal movements and a drop in temperature yielded results which showed normal contraction on some gauged lengths, on others a very slight change, while certain of the measured lengths, those spanning cracks in the pavement, were longer at the lower temperatures.

It was found that transverse cracks which open with a drop in temperature do not always entirely close again, but displayed a tendency to progressively increase in width. Probably that was due to fine particles of sand and abraded material of the pavement lodging in the open fissures. A repetition of the process caused a progressive lengthening of the pavement. During a period of 52 days one set of measurements showed the combined effect of decrease in temperature and progressive increase in width of crack amounted to .0395, practically four hundredths of an inch. This occurred on a pavement which had been laid about four months. The crosswise gauged lengths on the same street and during the same period of time contracted regularly with, lowering of temperature, the maximum amount observed being .0039.

A number of earlier determinations on the coefficient of expansion of building brick gave a value in the vicinity of .0000040 per degree F. This value seems to fit the present tests fairly well. The observed changes were somewhat less than called for by the above value of the coefficient, but the actual range in temperature of the brick was not ascertained with precision. Surface temperatures of the brickwork were used, and not unlikely the range in mean temperature was less than the recorded amount.

Taking the observations as they were made, the contraction of the 40-foot roadway of Euclid avenue, for a range in temperature of 100 degrees F. was 0.1043 and 0.1101 respectively at two sections of the roadway. The contraction called for on the basis of the above mentioned value of the coefficient would be 0.1920. That is the total amount, one-half of which might be considered as affecting each side.

During sunny days the temperature of the pavement naturally goes considerably higher than the temperature of the air a few feet above it. Observations on this feature showed a difference of 38 degrees on one occasion. The temperature of the air was, on the day in question, 64 degrees, four feet above the pavement. On the pavement in the shadow of the curb it was 69 degrees. In a freshly drilled pocket for a reference pin, on the sunny side of the street, the temperature was 85 degrees, while in the sun at the angle of the pavement and curb the thermometer rose to 102 degrees.

In the laying of a cement grouted pavement a critical period is encountered at the very outset, during which care must be exercised just as in every cement structure, in order to avoid the formation of incipient cracks before the cement grout has had time to set and acquire strength. On account of the excess of water used in making grout the setting is much retarded and several days may elapse before a substantial degree of hardness is acquired.

During this period the pavement should remain at a constant temperature, if it were possible, day and night. A drop of 20 degrees calls for a contraction of about one-tenth of an inch in a length of 100 feet. It is a fortunate circumstance in laying a pavement when a minimum range in temperature is experienced during the first 48 to 96 hours after grouting. Incipient cracks have been developed at a very early period following the grouting, resulting in injury to the street even before it was opened to traffic. Hot, sunny days followed by cool nights are menacing to freshly grouted pavements.

Transverse cracks have been started, which ultimately extended across the street, by the influence of the end





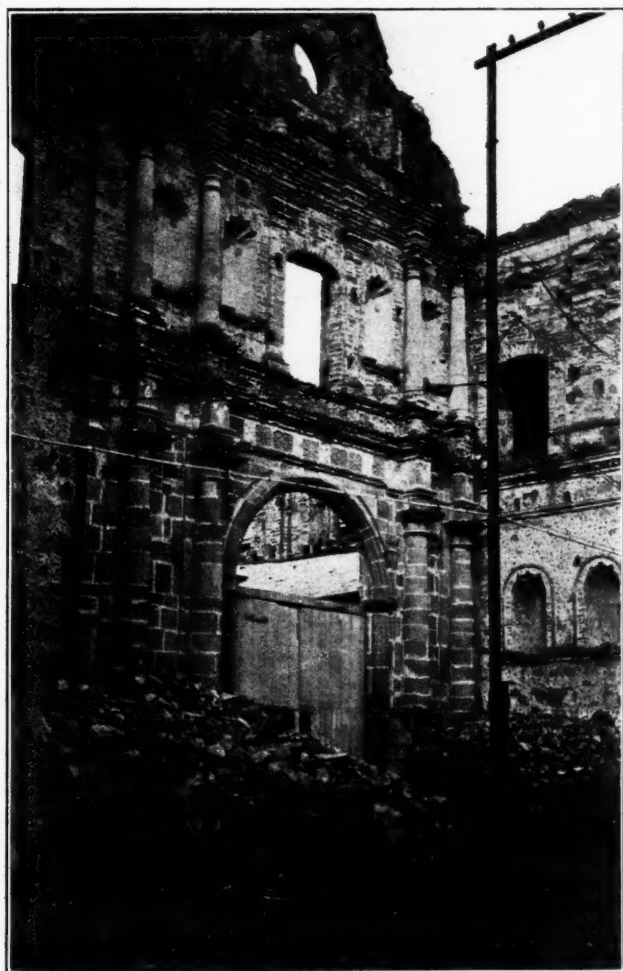
BRICK PAVEMENT WITH CEMENT FILLER, PLAZA AT THE NATIONAL THEATRE, PANAMA.

joints of the edge stones against which the pavement was laid. The usual manner of laying pavements, with joints broken in one direction only, affords favorable paths for cracks once started to extend from curb to curb.

Recently an opportunity was furnished for inspection of the streets of the city of Panama, where brick pavements, cement filled, have been laid from five to six years. The pavements were without expansion joints at the sides. There are no street car tracks in Panama.

The pavements are in very fine condition. In one place only were cracks of any kind noticed.

At Panama the temperature is quite high throughout the year, and while the nights are cool still the drop in temperature is not great. It is believed that equable thermal conditions have contributed toward maintaining the integrity of these pavements, and that pavements in south-



FLAT BRICK ARCH IN RUIN OF OLD CATHEDRAL AT PANAMA, WHICH HAS REMAINED INTACT ABOUT TWO CENTURIES.

ern climates should in general be aided by the smaller range in temperatures over those experienced in northern climates.

In conclusion, the results now available point to the undesirability of bonding the pavements with street car tracks, excepting possibly those of the very best construction. Cracks parallel to and adjacent to the tracks are likely to develop if the pavement is called upon to follow the usual elastic depression of the rails. Obviously there can be no lateral thrust to the pavement if the rails are left free to depress.

The strain measurements show that transverse expansions and contractions proceed with greater regularity than longitudinal movements. A progressive change in length or creep of a portion of the pavement is due to alternate changes of temperature, open cracks being partly filled with abraded material and prevented from closing when a rise in temperature occurs.

Cautionary warning is found in the behavior of pavements which have developed transverse cracks in the early stages after grouting. At this time exposure to a wide range in temperature is undesirable.

Pavements are probably benefited by a certain amount of compressive stress in a longitudinal direction. Transverse cracks will be kept closed so far as possible, and if the compressive stress is not excessive spalling would not be induced. The open ends of paved streets, having no buttresses to take the thrust, may be expected to develop transverse cracks.

The minimum amount of crowning necessary to turn the water is advantageous to enable the pavement to resist compressive stresses without causing rupture during spells of sudden heating. Bends and reversed curves in streets are disadvantageous to the pavements.

A superior material is provided in paving brick of current manufacture, the use of which requires careful engineering skill, and it appears that questions pertaining to the effects of temperature changes are among those which require most prominent attention.

### CONCRETE SIDEWALKS IN FLORIDA

IN Sarasota, Fla., sidewalks are constructed by the abutting owner, or, if he fails to do so after notice by the town council, by the town at his expense, the cost being a lien on his property. The obtaining of materials for walks is a troublesome problem, if anything more durable than wood is desired. There is no clay for bricks, even if these were considered desirable. Flagstones would have to be brought from some distant State at considerable cost for freight. There is absolutely no stone or gravel, oyster shells being about the only substitute. The sand available is almost as fine as talcum powder.

Under these conditions City Engineer John W. Philip has prepared specifications for constructing walks of cement, either in sheet or tile form. For the former a foundation  $3\frac{1}{2}$  inches thick is constructed of a mixture of one part Portland cement to  $3\frac{1}{2}$  parts of clean sand or broken shell, no part of which will not pass a 2-inch ring. As soon as this has been placed it is covered with  $\frac{3}{4}$  of an inch of a mixture of one part cement to  $1\frac{3}{4}$  parts of sand, thoroughly mixed both before and after wetting and floated to a smooth surface. Joints entirely through the pavement are provided in the usual way.

The sidewalk tile may be of any size, but must be hexagonal in shape. If of one square foot or less in area they must be at least  $1\frac{1}{4}$  inches thick; if larger than this, at least  $1\frac{3}{4}$  inches thick. The wearing surface must be at least  $\frac{1}{2}$ -inch thick, composed of one part cement to one of sand; the balance to be at least one cement to three sand. Tiles must be seasoned at least ten days before laying, and must be laid on a foundation at least  $1\frac{1}{2}$  inches thick, and proportioned as for sheet cement foun-

dation. They are to be laid within not more than two hours of the laying of the foundation, and brought to grade throughout with a straight edge. Along each edge of a tile walk must be placed a concrete curb not less than 2½ inches thick and 6 inches deep.

It is probable that these constructions would not stand conditions in a northern climate; but in Florida there is no frost, and the sub-foundation over the most of the eastern part of the State is sand. Cement tile walks give good satisfaction in Atlanta, Georgia, and several other cities in that and neighboring States.

## AN ASPHALTIC GRAVEL MACADAM

Gravel Deficient in Bonding Qualities—Careful Grading of Sizes and Thorough Rolling Necessary—Cost of Construction in Longview

By P. E. GREEN\*

In the fall of 1911, the city of Longview, Tex., after having paved the central part of the city with creosoted wood block, decided to put in a cheaper class of pavement on two of the less important streets. The pavement selected consisted of two courses, the base being ordinary water-bound macadam, and the wearing surface asphaltic macadam. The work was done by the same contractor who had the contract for the main paving work, and on a force account basis. The city owned a small jaw crusher and there was available a local "iron stone," which could be used for making the base course. This iron stone was a rather friable, weather-worn rock, and was mined at various small knolls surrounding the city. It was placed on the street using the crusher run and when well flushed and rolled formed an excellent, well-bonded foundation. It was not necessary to add any additional material to help out in the bonding of the stone, as there was considerable clay naturally enclosed in the native rock. This foundation course was laid with an average thickness of 8 inches.

For the wearing surface considerable more difficulty was encountered in deciding what material to use. In this part of Texas freight rates are very high, and there was no local stone available. Crushed limestone delivered on the streets cost about \$3.25 per yard, and even at that price was not the best material, being soft and dusty. A good quality of washed gravel was available at a price delivered on the street of about \$2.20 per cubic yard. Gravel is, however, rather unsuitable for use in making a wearing surface which depends on bituminous cement for its bond. The reason for this is that gravel, being generally round and weather-worn, does not "lock" well together, and the strength of the wearing surface is dependent almost entirely on the bond of the bituminous cement. It was necessary, however, to decide which was to be preferred under the circumstances. The limestone had better locking qualities, but was high in first cost, and the amount of money available was limited. It was decided therefore to use the gravel and make every effort to lock or bond it by rolling.

This scheme was followed out, and gravel ordered for the wearing surface. It was specified that the gravel, as spread on the street, should be of a size that would pass a ring of 2-inch diameter and be held on a ring one-half inch in diameter. After a small yardage had been spread under these specifications, it was found that there was no "lock" at all between the stones, and that when filled with the bituminous cement but little strength was secured. It is believed that any bituminous macadam that depends only on the bond of the filler for its strength will be a failure, and therefore this yardage was taken up and the gravel afterwards used was still further screened so as to eliminate practically all pebbles below three-quarters

of an inch in size. Thus a much more open material was secured and it was rolled and rerolled with a 10-ton roller. Considerable success was obtained in securing a surface that locked together, though at no time was as strong, unyielding a surface secured as it is possible to obtain by using crushed limestone or similar materials.

After the surface had been rolled to the satisfaction of the inspector, 1½ gallons per square yard of Texaco asphalt was poured over the pavement, and immediately behind the asphalt, pea-size gravel was lightly spread over the surface, and the whole again rolled. This was then covered with one-half to three-quarters of a gallon per square yard of the asphaltic cement, and over this second coat of cement was spread coarse sand, and the whole again rolled.

By carefully grading the gravel, as explained above, and by taking the greatest care to see that no asphaltic cement was poured until the stone was thoroughly dried out, and then only during warm weather, a hard, compact surface was finally obtained which has since withstood a considerable traffic. The traffic is of a character which is very hard on a macadam pavement, consisting very largely of narrow-tired vehicles loaded with from one to three bales of cotton. The pavement has, however, withstood about three months of this traffic without any appreciable signs of loosening or rutting, with the exception of two or three small spots, which were promptly cut out and repaired. On account of the fact, however, that so much care had to be taken with the gravel used, and that it all had to be screened after being received in order to eliminate small pebbles which prevented the locking together of individual stones, it would probably have been cheaper to have purchased crushed limestone in the first place.

Over three gallons of asphaltic cement were used per square yard of pavement laid, but much of this represents waste, because of failure to get a bond in the gravel and its consequent removal. About two gallons per square yard of completed pavement was actually used.

All of this pavement has now been subject to a considerable local traffic, amounting to about 250 vehicles per day, since January 1, 1912, and part of it to this traffic since November 15, 1911. It has held its bond well and there is no sign of rutting. Some conclusions may be drawn as to this method of construction. They are as follows:

First.—Force account work is nearly always expensive. It was in this case. This was partially due to extremely wet weather.

Second.—Gravel can be made to lock and bond only after a great deal of labor and trouble is taken with it.

Three.—The bond of an asphaltic macadam pavement should not depend on the asphaltic cement.

Fourth.—It would probably be economical to pay twice as much for crushed stone as for gravel to get equal results.

The accompanying table shows the cost of the work, including the contractor's profit of 15 per cent:

Quantities.	Grading, incldg rolling, 1,200 cu. yds.	Curb (wood, 2 x 12"), 1,915 lin. ft.	Foundation (8" loose), 785 cu. yds.*	Top coat, gravel, 404.3 cu. yds.†	Asphalt, 3,872 sq. yds.
Cost:					
Labor .....	\$587.13	\$141.16	\$434.01	\$629.08	\$346.96
Labor, per unit .....	.489	.074	.112	.162	.090
Material .....	95.08	1,393.60	888.58	1,111.25	
Material, per unit .....	.050	.360	.230	.287	
Total .....	\$587.13	\$236.24	\$1,827.61	\$1,517.66	\$1,458.21
Total, per unit .....	.489	.124	.472	.392	.377
<b>Wages.</b>					
Foreman .....	\$5.50				
Engineer .....	\$5.00 and	\$5.50			
Timekeeper .....	2.00				
Waterboy .....	1.00				
Skilled labor .....	2.50				
Labor .....	1.75				
Teams .....	4.00				
<b>Materials.</b>					
		Crushed rock .....	\$1.50 cu. yd.		
		Gravel and sand* .....	1.87 cu. yd.		
		Asphalt .....	20.00 pr ton.		
		Lumber .....	10.00 per M.		
		*On cars.			

Cost per square yard of asphaltic macadam equals \$1.40.

\*Civil and Sanitary Engineer, Chicago.

\*And 3,872 sq. yds. †And 3,872 sq. yds.



## ERIE WATER WORKS IMPROVEMENTS

### Existing Intake, Settling Basins and Pumping Equipment— Pumping Plant to Be Enlarged and Filters to Be Built

By Thomas Fleming, Jr.

ERIE, PA., situated at the western end of Lake Erie, had a population of 66,525 by the 1910 census and is growing rapidly, the population in 1900 having been 52,733, showing an increase of 26 per cent. in the decade.

Of the original waterworks plant, constructed in 1868, only the supply mains remain in service. The present plant consists of a steel intake extending across the harbor from the lake to the pumping station on the harbor front, three horizontal, compound pumps, horizontal tubular boilers, a 30,000,000-gallon reservoir 237 feet above the lake on a hill at the opposite end of the town from the lake front, settling basins on the island between the harbor and the lake, and a distributing system containing 190 miles of cast iron pipe.

The intake was completed in 1908 and consists of 9,334 feet of 60-inch riveted steel pipe connected to 8,307 feet of cast iron pipe of the same size, which in turn connects to a sump for the pumps at the pumping station. The steel main terminates in a crib 40 feet by 40 feet by 19 feet, which was placed on the bottom of the lake where there is a depth of 35 feet of water, insuring a depth of water over the intake of 26 feet. This crib is located a mile from shore. From this intake the steel main extends to Presque Isle, which separates the lake from the harbor and on which are located two settling basins into which water may be by-passed from the main. From this point the main extends across the harbor to the pumping station. The present capacity is 29,000,000 gallons per twenty-four hours, but this can be increased to 55,000,000 gallons per twenty-four hours by modifications to the discharge end at the pumping station, which limits the capacity at present.

The settling basins on Presque Isle were constructed in 1910 to serve as preliminary settling basins to relieve the high turbidity that occurs during certain periods of the year. These basins are rectangular in shape, are constructed in excavation with earth banks, and bottoms and banks are lined with concrete. The water level in the basins is somewhat below lake level, depending upon the loss through friction in the supply main, and the bottoms of the basins are at elevation 14 below lake level. Water is admitted into either basin through a valved by-pass connection from the steel main and is distributed across the inlet end through a submerged pipe having openings spaced uniformly along its entire length and extending across the inlet end of the basin. Water is taken off from the opposite end of the basins through a similar connection to the steel main, so that either basin can be placed in commission, and with practically very little loss in friction.

The pumping equipment consists of a Gaskill horizontal compound pumping engine erected in 1886, with a rated capacity of 5,000,000 gallons per twenty-four hours; a Worthington horizontal compound pumping engine erected in 1893, with a rated capacity of 12,000,000 gallons per twenty-four hours; and a Worthington horizontal compound pumping engine erected in 1899, with a rated capacity of 8,000,000 gallons per twenty-four hours. The boiler equipment consists of eight horizontal tubular boilers, carrying 125 pounds steam pressure and each rated at 150 h.p. This machinery is located in a brick building on the lake front overlooking a large park, dock, and public swimming pool, all of which belong to the waterworks. (See MUNICIPAL JOURNAL for Sept. 22, 1909.)

The distributing system is divided into high service and low service. The high service embraces the suburban district at the far end of the town opposite from the lake front and is supplied by direct pumping through a 24-inch force main, which extends from the pumping station to this

district. The low service district embraces the business, industrial and main residential section of the city and is supplied through a 20-inch and a 30-inch force main which extend from the pumping station to the reservoir, but also feed water directly into the mains. The two systems are connected together by a series of check valves which in the case of an emergency would let water from low service into the high service system. The Gaskill pump and the smaller Worthington are used for both high and low service and the larger Worthington for low service only. The low service pumps work against a pressure of 105 pounds and the high service pumps against a pressure of 125 to 130 pounds.

The water consumption of Erie in 1910 averaged 13,750,000 gallons per twenty-four hours, representing a per capita consumption of 204 gallons. The increase in water consumption has been even greater than the rapid growth of the city, for the consumption in 1900 was 8,560,000 gallons and in 1890 was 4,550,000 gallons. A close analysis of the use of water would indicate that this increase is not due so much to an extravagant use of the water as to a greatly increased demand for industrial purposes and to the large amount required for keeping up the lawns and parks and supplying the public swimming pool. It has been the policy of the city authorities to encourage the use of water for these purposes, and there is no doubt that this is greatly beneficial to the growth of the city. Water is sold to private consumers on a flat rate basis, and while a meter system, if installed, would undoubtedly reduce the water consumption, yet the adoption of this system is hardly probable on account of the discouraging effect it would have on property holders and others in keeping up the extensive lawns and parks. It is therefore reasonable to assume that the increase in water consumption in the future will be at least in proportion to the growth of the city. Of the water consumption 25 per cent. is by the high service district consumers, 45 per cent. by the low service and domestic consumers and 30 per cent. by the manufacturing industries, most of which are located on the low service system.

While the average water consumption is less than 14,000,000 gallons per day, yet there are periods in the year when the maximum is far in excess of this. During July, 1911, there was a period of seven days when the daily average consumption was 18,413,000 and when there was a maximum day of over 20,000,000 gallons. This period severely taxed the pumping capacity of the waterworks plant, and if one of the pumps had been out of commission it would have been impossible to supply the demand without curtailing the water consumption.

By plotting population and consumption curves, it is estimated that in 1920 the average daily consumption will be 20,000,000 gallons.

The water supplied for the greater portion of the year is excellent, but there are periods when the lake is agitated by windstorms, that the turbidity is high and the water is unattractive for drinking purposes. It is also a recognized fact among sanitary engineers that all water taken from the Great Lakes is subject to the possibility of contamination from some passing steamer or perhaps from some current carrying sewage from one of the numerous cities bordering the Great Lakes, and that at an early date all communities on the lakes will have to install purification plants. Several of the progressive cities on the lakes have already installed plants, and it is proposed by the officials of Erie to place this city immediately in the lead in the water supply furnished.

The rebuilding of the old waterworks is imperative. The city has outgrown the present plant, the pumping equipment of which has not been added to for a long period. The type of pump is antiquated and uneconomical and the capacities are unequal to supplying the maximum demand.

The high service district suffers from inadequate pressure, due to the difficulty in maintaining this pressure by direct pumping, and this district is constantly growing and developing in parts of the town at even a higher elevation. The present distributing system, reservoir and intake facilities are excellent, so that by rebuilding the pumping station and installing a filtration plant and improving the high service supply system the city will be supplied with a first-class waterworks system in every respect.

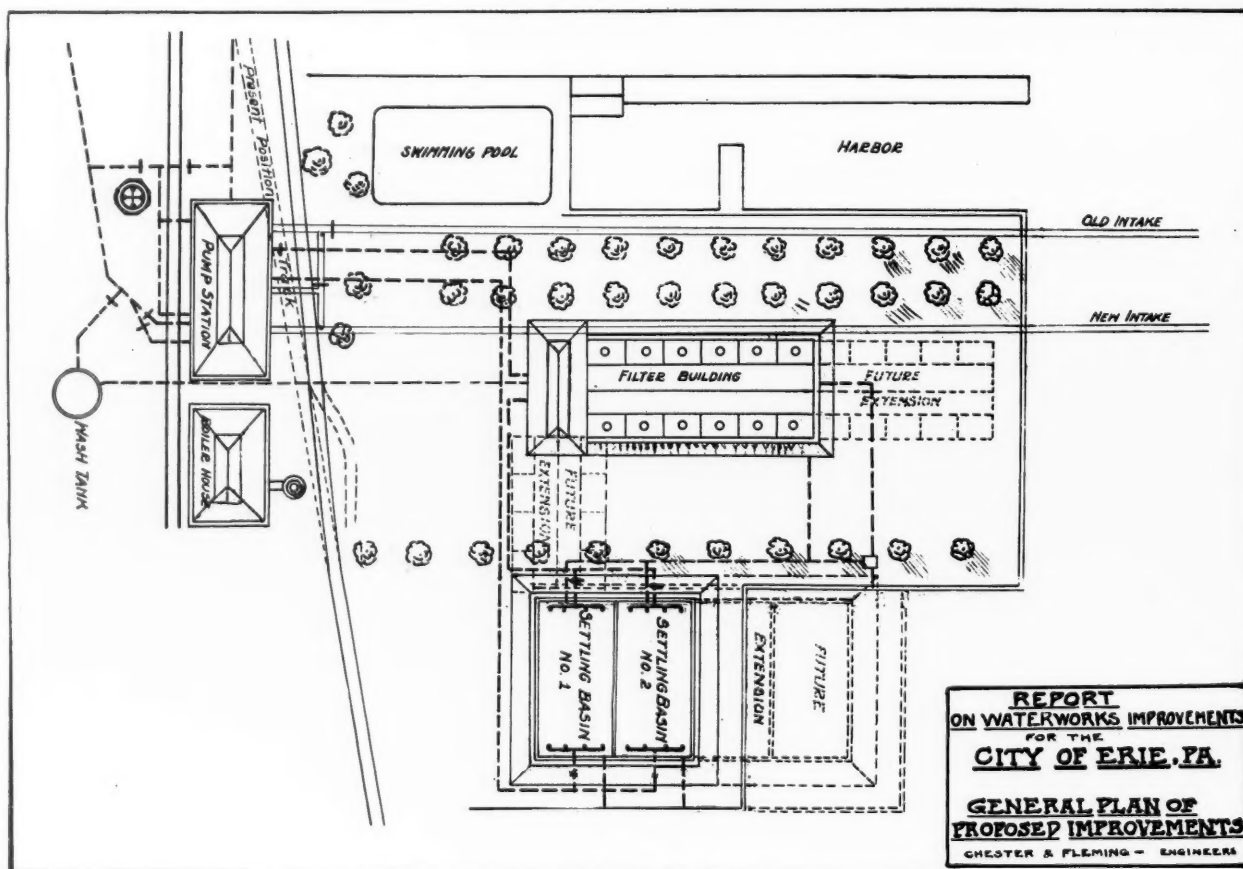
#### PROPOSED IMPROVEMENTS.

It is proposed to construct a filter plant in the park at the pumping station and to rebuild the present pumping station and boiler plant, utilizing the existing pumps as auxiliaries until such time as it may be necessary to install additional pumping machinery to meet an increased demand.

It is proposed to install a 20,000,000-gallon pumping engine, which will pump against 145 pounds water pressure, with a steam pressure of 195 pounds, and which eventually will pump against the low service pressure only, with a steam pressure of 175 pounds. This arrangement will permit this pump to take care of the entire water supply for several years, with a little assistance during the hottest periods from the old pumps; and when the consumption has increased to 20,000,000 gallons in the low service district the systems will be separated and a new high service pump will be installed to pump the high service only. The new pump which is now to be installed will pump through 24 and 20-inch mains to a standpipe which will be built adjacent to the reservoir and to a height of 60 feet above the flow line in the reservoir. This standpipe will be connected to the high service system, and the surplus water pumped will overflow from standpipe into the adjacent reservoir, where it will feed the low service district through a 30-inch main. A portion of the water may be admitted into the low service system through valved connections from the high service rising mains in the lower portion of the town.

The type of pump to be furnished will be a vertical, triple expansion, condensing, high duty, crank and flywheel pumping engine, self-contained. The contract for furnishing and erecting this has been awarded to the Bethlehem Steel Co. for \$102,400, and there is a guaranteed duty of 168,000,000 foot pounds when working on standpipe service and 156,000,000 foot pounds when working on reservoir service. The new pump will be erected at one end of the old pumping station, with room left for a duplicate unit. The superstructure of the old pumping station will be torn down and a new building will be constructed over the entire plant, which will be 56 feet by 110 feet in plan and 70 feet high from the main floor to the clearance of the roof. The structure will be built of brick, with red sandstone trimmings and a tile roof. There will be a glass skylight over the center of the building, with concealed ventilators in the sides, and the entire roof will be supported on steel roof trusses. A 20-ton crane will sweep the entire building.

To economically operate a modern type of pumping engine it is necessary to furnish high-pressure steam; consequently some of the old boilers in the boiler house must be replaced by those of the high-pressure type. It is proposed to install 1,200 horsepower of high-pressure water tube boilers with superheaters and with coal-handling machinery, conveyors, and overhead storage bins. These boilers will replace one-half of the old boilers, and for the present it is proposed to use the old boiler house, but to install the new equipment with the end in view to eventually replace this structure. A railroad siding, at the same level as the boiler room floor, is built adjacent to one side of the boiler house. It is proposed to construct a coal pocket under this siding and to install a modern type of conveyor to lift the coal from this pocket and discharge it into steel bins constructed above boilers. These bins will supply stokers under the boilers in the usual manner. Ashes will be removed through a tunnel below the boiler room floor to an ash pit at the end of the boiler house,





where they will be lifted by a conveyor to a storage bin constructed over the siding.

The proposed filter plant will have a capacity of 24,000,000 gallons and will be designed so that this capacity can be doubled by future extensions. The plant will consist of twelve 2,000,000-gallon units; coagulant house, with chemical laboratories and offices; two settling basins, each with a capacity of 1,500,000 gallons, and a clear water basin extending underneath filters and coagulant house. Water will be lifted from the sumps in the pump station by means of centrifugal pumps and will be delivered through a 48-inch main to the settling basins, whence it will flow by gravity on to the filters and thence through clear water basin to the pumps at the pumping station.

The entire plant will be constructed of reinforced concrete and superstructures of buildings will be finished on the exterior in brick with stone trimmings.

The site for the filter plant and settling basins is on reclaimed ground, this land having formerly been a portion of the lake and refilled for parking purposes. Rock level, however, is only 5 ft. below lake level and is good and solid. The foundations of all structures will rest on this solid rock and the base of the clear water basin will be kept above lake level as a precautionary measure against any possible contamination from outside leakage. The settling basins will be built in the lake adjacent to the reclaimed tract and the bottoms will rest on solid rock. Each settling basin will be provided with a centrifugal pump located in a sump at the center of the basin and driven by an electric motor located on the roof above. This pump will be used for cleaning the basin. Settling basins will be covered with reinforced concrete roofs and earth fill, as the climate at Erie is too cold in winter to warrant the use of the open-type basin.

Filters will be controlled by hydraulically-operated valves and with the usual equipment of rate controllers, loss of head gauges, sampling pumps, etc. The coagulant house will be of a gravity type for storing and mixing chemicals and with a gravity sight feed for the coagulants. The handling of coagulants will be so arranged that the material will be delivered from the car and put through the plant without being touched by the operator. This feature

is expected to result in a very economical operation of the plant.

Contracts for all of these improvements will be awarded, it is expected, before May 1 of the current year, and it is hoped to have the entire plant in operation by January 1, 1913.

The design and supervision of the construction of these improvements is in charge of the firm of Chester & Fleming, consulting engineers, Pittsburgh, Pa.

#### NOVEL IDEAS IN A CALIFORNIA PARK

CENTRAL PARK, in the heart of the city of Los Angeles, Cal., has recently been thoroughly reconstructed, and in this some modern ideas have been put into practice. Until recently the park was in a half wild condition, with depleted soil, decaying trees, no lights and very little else for the Park Commissioners to build upon. It now contains a modern underground comfort station, a concrete fountain with colored electric lights, a sprinkling system that is said to be unique, a pair of "bubbling spring" sanitary drinking fountains, substantial concrete benches, etc. This great change made it necessary that the park be closed to the public for several months while the processes of tree felling, excavating the soil and replacing it with new, and applying fertilizer, were under way. The total cost of transforming these five and one-fifth acres was approximately \$32,000, about \$10,000 being the cost of the underground comfort station, \$2,000 being expended on the concrete fountain and \$960 on the benches. In the underground building containing the comfort station are also the office of the park caretaker and the pump and electric light equipment for the fountain. The station is approached by ornamental staircases, which are of so inconspicuous design that the view across the park is not obstructed or marred by them.

The sprinkling system, which was designed by Superintendent Frank Sherer, consists of water pipes laid below the surface of the ground, supplied with spraying nozzles at the surface of the lawn at proper intervals, the whole being so arranged that a large area of lawn can be



CENTRAL PARK, LOS ANGELES, SHOWING FOUNTAIN, BENCHES AND LIGHT STANDARDS.

sprinkled by the opening of a single valve in the water pipe.

The main intersecting cross walks through the park are of brick set on edge in a formal pattern and producing a pleasing effect. They intersect at the fountain, which is in the center of the square and which is surrounded by ornamental concrete benches. This fountain is of attractive design and is constructed of concrete throughout, including the four children's figures, which surmount the basin. On the underside of the basin and near its edge are placed a circle of incandescent lights of various colors, which are operated by an automatic flasher in the underground station, so as to give constantly changing light effects, the colored lights shining through the veil of water which falls over the rim of the basin.

## ASPHALT REPAIRING IN WASHINGTON

### Municipal Repair Plant Desired—Reasons Therefor— Economical Age Fixed at Eleven Years—Prices for Repairing and Resurfacing

THE District of Columbia contains nearly three million square yards of asphalt pavements, which is believed by the Engineer Department to be a greater area than that in any other city in the world with no greater population than that of the District. During the fiscal year of 1911-1912 about 98,000 square yards of old asphalt were relaid, and 183,000 square yards during the previous year, at the end of which year the average age of the older pavements was 14 years and the greatest age 30 years. For the year 1912 \$425,000 was appropriated, and it is estimated that by the end of the year the average age will be further decreased, bringing the pavements up more nearly to the age and condition which they should have, and permitting a reduction of the maintenance fund to \$390,000 for 1913.

In their estimates for the year 1913 the commissioners have asked for authority to establish and operate a municipal asphalt plant. Their reasons for this are explained by the commission as follows: "It is actually cheaper to maintain pavements at an average age of 11 years, resurfacing when the cost of patching becomes excessive, than it is to maintain them on a lower standard and of a greater average age. In order to bring the average age down to 11 years Congress has lately increased the appropriation, and in another year or two we shall have arrived at the point where the pavements can be maintained with the maximum of economy. Very soon, when the average age of our pavements has been reduced to 11 years, we can compute by a simple formula the amount that will be required for asphalt pavement maintenance. A most careful study shows that we shall then need 10½ cents each year for each square yard of pavement in existence if we continue to operate under the contract system, or approximately 9½ cents per square yard per annum if we procure a municipal plant, following the example of the more carefully managed American municipalities.

"In doing the work there is a saving of the contractor's profit. The same force which is now used in inspecting a contractor's work can be used in carrying on the work itself, thus reducing the number of those employed and paid either directly or indirectly by the public, there being no adverse interest between the agency doing the work and the agency paying for it, before results can be obtained. A plant owned and operated by the District would have continuous and regular employment, while a contractor in making a bid has to cover not only the period when his plant is working on the contract for a limited time, but also the period when the plant is idle."

At the present time the prices paid for resurfacing and repairing asphalt pavements in Washington are as follows:

Laying standard asphalt pavement (2½ inches asphalt surface, 2 inches binder before compression, with 6-inch concrete base), \$1.68.

Laying standard asphalt surface, 2½ inches before compression, 64 cents.

Laying standard asphalt surface, resurfacing by the heater method, per cubic foot, 66 cents.

Laying asphalt binder in connection with resurfacing work, per cubic foot, 28 cents.

Laying standard asphalt surface for repairs, cuts and miscellaneous work, 57 cents per cubic foot.

Laying asphalt binder for repairs, cuts and miscellaneous work, 43 cents per cubic foot.

Laying standard asphalt surface for repairs, etc., within the space required by law to be kept in repair by street railway companies, 63 cents per cubic foot.

Laying asphalt binder for repairs, etc., within the space maintained by the street railway companies, 48 cents per cubic foot.

Vitrified block gutters are laid in reconstructing or resurfacing asphalt streets. During the fiscal year of 1911 9,313.22 square yards of these were laid at a cost of \$21,519.04, of which \$7,436.11 was the cost of the blocks. This work involved 2,528.38 cubic yards of grading and removal of material.

## SEWERAGE AND POLITICAL BOUNDARIES

THE New Jersey State Legislature last month passed a bill requiring that before one municipality could locate a sewage disposal plant within the territorial limits of another the consent of the latter must be obtained. This was confessedly an attempt to prevent Orange, East Orange and Montclair from locating Emscher tanks in Belleville and Bloomfield and to force them to combine with other cities in the Passaic Valley sewerage project. At present the State Board of Health must approve of both the kind and location of all such plants.

On Wednesday, March 27, after a public hearing, Governor Wilson vetoed this bill, and the reasons given by him in his veto message are, in our opinion, unanswerable, and are exceedingly well stated in the following sentences:

A very careful consideration of this bill convinces me that it is based upon a most unsafe and unscientific principle.

The question of sewage affects whole sections of the State. It cannot be dealt with community by community, without regard to the topography of the country, the method and closeness of its settlement or the natural facilities for disposing of sewage.

Political divisions are in no sense natural divisions when this most difficult matter is to be handled. To adopt the principle of this bill would be to embarrass engineering undertakings connected with the public health in the most serious way, and in some instances might render them impossible.

Any careful consideration of the great urban areas of the northern part of the State will convince a careful student of this subject that those areas must be studied as wholes and dealt with as wholes, and that it is not safe to put the settlement of neighborhood questions with regard to drainage in the hands of any authorities having a smaller jurisdiction than that of the State itself.

It would seem that the present powers of the State Board of Health are sufficient to safeguard the several political divisions of the State against the deleterious influences resulting from the sewage disposal within their limits, and if the board has not now powers sufficiently comprehensive to accomplish this object, such powers should certainly be conferred upon it, rather than allow questions of drainage to be settled by neighborhood preferences and jealousies, instead of by the scientific rules of sanitary engineering.

I think the establishment of the principle involved in this bill would be a most unsafe experiment.



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APRIL 4, 1912.

### CONTENTS

Strain Measurements of Brick Pavements. (Illustrated.) By Jas. E. Howard.....	511
Concrete Sidewalks in Florida.....	513
An Asphaltic Gravel Macadam. By P. E. Green.....	514
Erie Water Works Improvements. (Illustrated.) By Thos. Fleming, Jr.....	515
Novel Ideas in a California Park. (Illustrated.).....	517
Asphalt Repairing in Washington.....	518
Sewerage and Political Boundaries.....	518
Information for City Engineers.....	519
Sidewalks in Washington, D. C.....	519
Hydraulic Concrete Pavements. By S. Whinery.....	520
Freezing Water Mains.....	521
Concrete Curb Stones. (Illustrated.).....	521
New York's Pavements.....	522
Wichita's Paving Record.....	522
News of the Municipalities. (Illustrated.).....	523
Legal News—A Summary and Notes of Recent Decisions.....	534
News of the Societies.....	536
Personals.....	537
Municipal Appliances. (Illustrated.).....	538
Industrial News.....	540
Patent Claims. (Illustrated.).....	541
The Week's Contract News.....	542

### Information for City Engineers

A FEW weeks ago, in connection with asking other information from city engineers throughout the country, we requested them to inform us what particular subjects they would especially like to see treated in the MUNICIPAL JOURNAL this year, our idea being to endeavor to provide such information as was desired in the articles prepared or obtained for publication. We received 71 replies from cities of 5,000 to 30,000 population, and it is interesting to examine these as indicating to a certain extent the matters in which city engineers at the present time are most interested.

Various matters connected with streets and street paving were of special interest to 25, sewerage to 11, sewage treatment to 7, water supply to 9, street lighting to 4, keeping engineering records to 4, drainage to 2, parks and playgrounds to 2, and there was a single request for information on each of the following: Conduits, unit construction prices, payment of engineers, inspection, street monuments, designing concrete structures and sea walls.

Under the first head, streets and street paving, some of the subjects named were bituminous macadam and binder; the use of small portable plants and old surface materials in repairing asphalt pavements; results obtained from concrete pavements; pavement specifications; road building in sandy soil; covered drains at street intersections in the absence of storm sewers; tests for asphalt pavements; oiling sidewalks; construction of sidewalks, curbs and gutters.

Under the head of sewerage and sewage treatment there were several inquiries for descriptions of plants for small cities and towns; cost of sewer construction; merits of cement sewer pipe, with methods of inspection and testing, and sewer house connections.

The use of hypochlorite for water purification, water rates, deep well pumps and water systems for towns of less than 5,000 population are some of the topics under the head of water supply.

Comparing these subjects with those to be found in Volume XXXI of MUNICIPAL JOURNAL (July to December, 1911), using the percentage of the whole number of the requests for the information on the one hand and the articles dealing with these subjects on the other hand, we find that 35 per cent. of the requests were for articles on streets and street paving, whereas we had published 39 per cent. of our articles on this general topic. Sewerage and sewage treatment furnished the subjects for 25 1-3 per cent. of the requests and 20½ per cent. of our articles. Water supply furnished 12 2-3 per cent. of the requests and 27¾ per cent. of the replies. (The difference between percentages of requests and of articles printed would probably have been greatly reduced had we obtained requests from water works superintendents and commissioners as well as from city engineers.) Drainage formed the subject of two requests and there were two articles published on this subject. There was one request concerning river walls, and one article published. The subjects of wire conduits and inspection were the only ones mentioned in the requests concerning which we had not published at least one article in the volume under consideration. The other subjects were as follows: Street lighting, four requests, three articles; keeping engineers' records, four requests, three articles; parks and playgrounds, two requests, one article; unit construction prices, one request, four articles; payment of engineers, one request, two articles; street monuments, one request, two articles; concrete designing, one request, two articles.

The above shows, it seems to us, that we have not been entirely unsuccessful in gauging the needs of one class, at least, of our readers, if these 71 expressions of such needs can be accepted as representative. Other classes of city officials, however, were by no means neglected. Many of the articles already referred to were only partly, if at all, technical in their nature, but would be serviceable to councilmen as well as to engineers or superintendents. Also there were 12 articles on sanitation, 10 on street cleaning, 12 on disposition of municipal waste, 11 on city planning and 10 on municipal accounting, to give only a partial list of the articles not included among those referred to in the above analysis.

### Sidewalks in Washington, D. C.

SIDEWALKS in the District of Columbia are constructed of cement and the work is done under contract. At present the price paid for large sidewalk jobs adjoining paved streets is \$0.9675, or 13 1-3 cents per square foot. During the last fiscal year 63,945 square yards of sidewalk were laid, the greater part in the suburbs. There still remain a considerable number of inferior brick walks in the central part of the city, however, which should be replaced.

One-half of the cost of laying sidewalks is assessed against the abutting property, and ordinarily the commis-

sioners await a petition from the owners of more than one-half of the frontage along a block before ordering a new walk in. An exception is made, however, where a walk becomes dangerous, in which case the commissioners order the work done without awaiting for a petition.

## HYDRAULIC CONCRETE PAVEMENTS

Adapted to Streets of Moderate Travel—Two-Course Construction Recommended—Proportioning Ingredients—Expansion Joints and Bituminous Coatings

By S. Whinery, Consulting Engineer, New York City.

THE articles printed in MUNICIPAL JOURNAL of March 21st, and in previous issues of the paper, on hydraulic concrete roadway pavements are of great interest and value. They indicate that the utility and economy of this kind of pavement is at last coming to be appreciated.

In an article in *Engineering News* for July 21, 1904, the writer called attention to this kind of pavement, gave his ideas as to its proper construction, and predicted that on streets where its use would be appropriate it should be a success. The article closed with this statement:

"It would seem from the above considerations that such a pavement ought to possess much positive merit, and that it is well worth a fair trial." At that time, so far as the writer knew, only one or two rather crude attempts had been made to build such pavements.

The experience that is now accumulating indicates that this pavement will have a large field of usefulness, and that under favorable conditions of construction and use it will prove to be one of the most satisfactory and economical pavements for streets and roads. These conditions are that it must be intelligently and properly constructed, and that its use must be restricted to streets carrying only a very moderate burden of travel.

It should successfully occupy that rather wide gap between the macadam road and the present standard pavements, such as asphalt, brick and wood-block.

The pavements of this character that have been built are largely experimental in character, and they vary quite widely in construction. The writer would not expect some of them to give satisfactory results, and failure of these in the near future will not be surprising. The purpose of this brief article is to call attention to certain principles of construction which the writer believes to be important, if uniform good results are to be secured.

We may safely assume that the same general principles will apply to the construction of these pavements as to others. The recognized requisites in any street pavement or road are, first, that the structure shall have sufficient strength to carry the loads that pass over it, and second, that the surface shall be able to resist the abrasive action of the travel. In the case of a concrete pavement, this seems to indicate that it should be laid in two courses.

On any street where such a pavement will be appropriate a total depth of six inches of concrete will afford all necessary strength to carry loads, even where the sub-foundation is of poor quality; and there is no sound reason for making the lower four inches of this richer than the concrete found appropriate for the foundation of other pavements; say, 1:3:7. The upper two inches should be designed mainly to resist abrasion or wear. Quite likely we do not yet know the best mixture for this purpose. But we have reason to believe that resistance to abrasion and to crushing are closely related, and since rich, strong mixtures are most resistant to crushing we cannot do better in the present state of our knowledge than to assume that similar mixtures will best resist wear on the street. The fact that the pavements fail from wear and not from breaking down of the whole structure indicates clearly the part of the work that needs our closest attention and most careful work.

The logical construction is, therefore, in two courses, and I believe that experience demonstrates that this is best. Considering that the lower course may be of leaner concrete than it would be safe to use if the whole pavement were built in one course, the total cost will not be increased, as will be shown later, and the use of a special top course will undoubtedly increase the endurance of the pavement.

As at present advised the writer would use a foundation course four inches thick made of 1:3:7 concrete. This, if fairly well made, will have ample strength. Any kind of sound, hard stone or good gravel that is available can be used.

For the top course, two inches thick, it is important that a hard, tough stone be used. Our Eastern trap-rock of sound quality is ideal for the purpose. Where this is not available, the glacial boulders called "nigger heads" will make a first rate material if care be taken to inspect them and throw out all soft material before crushing. Hard crystalline limestone will do if nothing better is available but will not be so durable under wear.

If practicable all fragments over 1¼ inch and under one-half inch size should be screened out, for two reasons; under heavy wheel loads smaller fragments are more likely to be crushed and to start disintegration; and the fine material, if not screened out, is liable to segregate in handling and mixing, and to form weak spots that will wear more rapidly under travel and, in time, start depressions.

The best ratio for the surface course ought to be determined for each particular material used, as we do in the case of high class concrete, but a typical composition that should give good results is 1:2:4. Every care should be taken to make this surface-course concrete of high quality. Sufficient water should be used to make a *wet* but not a sloppy mixture.

In laying the concrete the bottom course should be placed, graded and rammed to the proper grade and contour, and the surface course should be laid and properly rammed to the true grade *before the bottom course has begun to set*.

The practice of sweeping over the surface of the concrete with street brooms should not be allowed. A sufficiently true and smooth surface can be produced by proper ramming. The sweeping may be used by careless contractors to cover up imperfect spots in the concrete, and does not, in any case, increase the utility of the surface.

Such a pavement should be constructed at a very moderate cost. Estimates will vary in different localities, but the following may be considered typical:

### Concrete first course 1:3:7.

1 cu. yd. of stone.....	\$1.40
3-7 cu. yd. of sand, at 90c.....	.39
1 bbl. cement .....	1.40
Mixing, laying and sundries.....	.90
	<hr/>
	\$4.09

This will lay 9 sq. yds. of four-inch concrete, cost per sq. yd.. 45.5c.

### Concrete surface-course 1:2:4.

1 cu. yd. selected stone.....	\$1.60
½ cu. yd. sand, at 90c.....	.45
1.7 bbls. cement, at \$1.40 .....	2.38
Mixing, laying and sundries.....	.90
	<hr/>
	\$5.33

This will lay 18 sq. yds. of surface, costing per sq. yd..... 29.6c.

Total for the two courses.. 75.1c.



It is interesting here to compare this total with the cost of a single six-inch course made in the ratio of 1:2½:5, which is probably leaner than most engineers would care to use for a pavement laid in a single course:

1 cu. yd. of stone.....	\$1.40
½ cu. yd. sand, at 90c.....	.45
1.35 bbl. cement, at \$1.40.....	1.89
Mixing, placing and sundries....	.90

\$4.64

This would lay six sq. yds. of surface, costing per sq. yd. .... 77.3c.

From this it appears that the two-course pavement is slightly cheaper than the one-course.

The question of how to deal with contraction and expansion is a troublesome one and we need more experience before we can decide what is best. We will make no mistake in providing expansion joints filled with bituminous cement along each curb, though in wide streets this may not prevent longitudinal cracks. It is an open question with the writer whether, on the whole, it is worth while to provide any expansion joints in the body of the street. They do not always prevent cracking even when comparatively close together, say 25 feet. These expansion joints do not wear any better, and usually not so well as the natural cracks, though they are usually considered less unsightly, presumably because the formed joints are straight and regular. Why not leave the street to work out its own system of cracking, and fill up the cracks, as they appear, with good asphaltic cement? This might, in the end, be found more satisfactory than artificially made expansion joints. It seems worth trying at least.

It is probable that on no other street surface can a bituminous coating of good asphaltic semi-liquid material be used with better results than on a concrete pavement, but the first application should not be made to the new pavement until the concrete has become well set. And the surface should be thoroughly cleaned before later applications are made.

#### FREEZING WATER MAINS

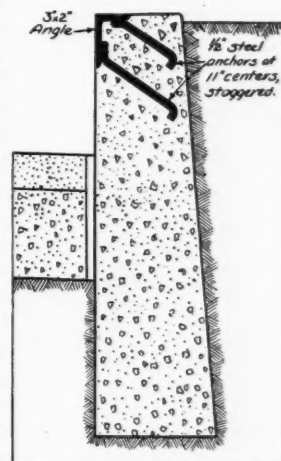
In 1909 a committee of the New England Water Works Association published the results of an investigation made by them, through correspondence with waterworks officials, concerning the freezing of water mains and services, the apparent relation between this and the depth of the pipe under the ground surface and other questions related thereto. The past winter has been an unusually severe one and has furnished an excellent opportunity for the acquisition of additional data on this subject; and the committee, believing this a favorable time to obtain additional information on the subject, are asking all members of the association to refer to the questions propounded in 1909 and furnish the committee with any additional information which they have recently acquired in answer thereto. The chairman of the committee is F. A. Barbour, 1120 Tremont building, Boston, and we know that he would be glad to hear from others as well as members of the association. The questions to which replies are asked are, in general, the temperature, both mean and extreme; location of city; source of water supply, gravity or pumping distribution, reservoir or standpipe (size, open or closed; capacity in relation to daily consumption); hours of pumping daily during minimum temperature, hourly rate during winter months, and minimum rate at night; size of supply main, character of soil, depth of ground water, depth to which frost extends in streets (average and maximum in each kind of soil); the same in fields; average snow covering in each locality, freedom of ground from snow during days or weeks of coldest weather, depths of supply mains of different sizes and in different localities, and likewise of the distri-

bution system; character, size and depth of service connections; size, depth and length of hydrant branches; method of draining hydrants; number of cases of freezing in mains and in services; opinion as to sufficiency of depth of pipes described, and as to whether extreme temperature conditions occur with sufficient frequency to justify a general lowering of the pipe system.

#### CONCRETE CURB STONES

The construction of curbs of concrete, either alone or in the combined curb and gutter form, is now quite common; but the making of concrete curb stones, to be set in place like any other stone curb, is a novelty, we believe. The city of Pittsburgh, Pa., has recently purchased about 20,000 linear feet of such curb,

however, sufficient to give it a thorough trial. This curb is cast in five-foot sections and has a mortise and tenon joint at the ends so that the consecutive stones lock together and are thus prevented from being thrown out of alignment. It is also provided with a steel angle protection at the upper outside edge. The firm from which the city purchased these, the Neville Concrete Company, of Neville Island, Pittsburgh, manufactures three sizes of curbs, one 6 x 24 inches for block paved streets under heavy traffic; another 6 x 21 inches for brick and asphalt

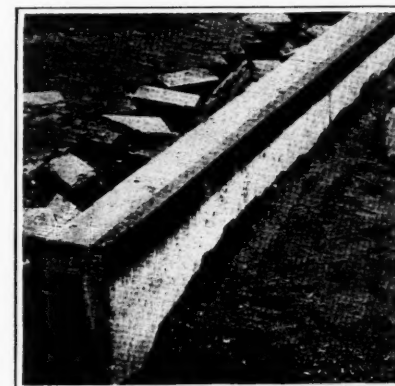


SECTION OF CURB.

paved streets under heavy traffic; and a 5 x 24-inch section for block paved streets under light traffic. The corner protection consists of a 3 x 2-inch steel angle of standard section, which is held in place by anchors which are imbedded in the concrete; these anchors consisting of

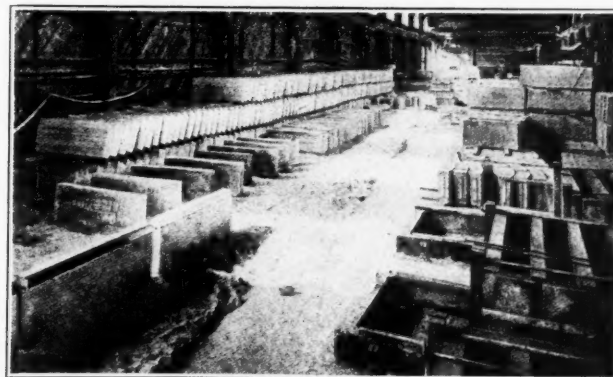
one-half-inch round steel rods which are welded to the back of the angle, staggered on the two faces and spaced 11 inches between centers. The welding is done by electrical welding machines. This angle is not patented.

The price paid for these curbs is 41 cents per linear foot for the 5 x 21-inch section, and 48



CONCRETE CURB IN PLACE.

cents per linear foot for the 6 x 24-inch section, both f. o. b. Pittsburgh.



CONCRETE CURB UNDER CONSTRUCTION.

## NEW YORK'S PAVEMENTS

LAST October Mayor Gaynor, of New York City, at the request of the Chamber of Commerce, Merchants' Association, Board of Trade and Transportation and the Automobile Club of America, appointed a committee to investigate the condition of the city's pavements, their methods of construction and repair, and recommend means for improving conditions. This committee comprises twenty-two prominent citizens, with A. R. Shattuck, of the Automobile Club of America, as chairman. The report of this committee was presented to the Mayor April 1, and severely condemns existing conditions. Nine sub-committees each submitted a separate report, and the whole makes a quite bulky pamphlet. Typical statements, showing the general tenor of the report and the recommendations are given below:

There can be no question in the mind of one who has made a careful study of the matter that if our streets were maintained in as good fashion as those of the chief cities of Great Britain the tractive effort required in the moving of merchandise through them would be reduced to one-half and that congestion of traffic would also be reduced in like proportion.

Many of our pavements, and especially those which are much used for heavy trucking, are in a condition injurious alike to the health and economic welfare of the community; they are rough, uneven, often broken and obstructed, expensive to clean and impossible to clean properly; they are inconvenient to use, excessively costly to maintain and are altogether a serious handicap on the prosperity of the city. To continue the building of more of the same kind would be most unwise and wasteful.

We do not wish to be understood as making an indiscriminate condemnation. There are several hundreds of miles of pavements in the various boroughs which are fairly good, but they are for the most part either newly laid or on streets where traffic is light.

A careful study of the methods used in the making and maintenance of our pavements has revealed conditions which abundantly explain why they are so bad. They are as follows:

1. Defective and antiquated specifications and obsolete methods.
2. Slovenly and careless workmanship.
3. Divided responsibility, there being no one responsible head over all public works in each of the boroughs.
4. Insufficient supervision.
5. Interference by one department of the city government with another in street work.
6. Lack of co-operation between the city and railroad companies, in regard to that part of the pavements for which the latter are responsible.
7. Delay in making repairs and in closing street openings.
8. Lack of a properly qualified force of inspectors and assistants to the engineers in charge of pavements.
9. Very little knowledge among our engineers, of the most approved modern methods of paving as carried on in places outside of the United States.
10. The system of long guarantees, for the maintenance of pavements by contractors, which hinders prompt repairs.
11. An almost complete lack of traffic statistics upon which to base an intelligent estimate of the value of the various kinds of pavement used.
12. No proper system in force for determining by tests the value of many of the materials used in paving, and notably so as regards granite and asphalt.
13. Restrictive specifications, especially as regards asphalt, which has prevented genuine competition and given to one interest a monopoly in the making and repair of asphalt pavements in Manhattan.
14. Too much license given to builders in the use of the streets in front of new buildings, which results in great hindrance to traffic and damage to the pavements.
15. The blockading or cumbering of the streets by other private interests, and by snow, which, under the present system of removal, cannot be disposed of rapidly.
16. No uniform standard or specification for the various types of pavement for all the boroughs.

The conditions as enumerated have come about partly through inheritance, and partly through the general lack of special knowledge of paving and the scant attention which has been paid to this important subject by our technical schools. Our engineers are not altogether to blame; city officials have often

disregarded their advice, and many recommendations for improvement made by them have yielded no fruit for that reason.

## COMMITTEE'S RECOMMENDATIONS

1. That all work which has to do with the laying, opening and restoring of pavements which is carried on within the limits of any borough, including transverse roads on streets through parks, but excepting driveways within the area of parks, be placed exclusively in the hands of the president of that borough, so that there may be one responsible head over such work, and thus remove all cause for disagreement and lack of co-operation between the different departments of the government.
2. That there be a complete reversal of the policy of the city in regard to pavements, and that ultimate economy rather than cheapness be made the governing consideration in their construction and maintenance.
3. That the city make its own purchases of all materials used in paving direct from the producer, and thus obtain better prices and a better quality than it now gets.
4. That those in charge of street work, and especially the chief engineers of highways in the various boroughs, be sent abroad to study the paving methods in use in the principal cities, and to obtain information which may be of use to them and of benefit to us in the improvement of our pavements.
5. That those methods which they find have given the best results in foreign cities be adopted, so far as practical, for our use at once.
6. That the engineers be furnished with a competent corps of assistants.
7. That steps be taken immediately to insure the obtaining of reliable statistics of traffic and a thorough knowledge of the value of the different materials used in paving without which intelligent work is impossible.
8. That all street openings be made and closed by the city at the expense of the person for whom the opening is made, and that this be done with the greatest possible dispatch.
9. That all repairs to pavements be made by the city, and that each borough have an adequate repair plant.
10. That all future guarantees for maintenance, if any are made, be either on the German plan—the contractor agreeing to maintain the pavement at an annual progressive rate of payment per square yard, to be paid to him in each of the years of the guarantee—or else that the necessary repairs be done by the city at the contractor's expense according to a fixed rate per square yard; the city being adequately secured.
12. That all dead and unnecessary tracks be removed from the streets.
13. That the street railroad companies be governed by the same rules which apply to individuals in the opening and closing of pavements.
14. That all future manholes be constructed in accordance with an approved design and be set perfectly flush with the pavement and the covers flush with the rims.
15. That more stringent regulations than now exist be established for the use of the street by contractors for the storage of building material; by the transportation companies for the storage of merchandise and by the pushcart men in peddling their wares.
19. That there be a paving board consisting of the chief engineer of the Board of Estimate and Apportionment (who shall act as president), and the engineer in charge of highways of each of the boroughs, whose duty it shall be to standardize specifications relating to all work which has to do with the pavements throughout the city to determine the quality of the materials used and to establish such standards of workmanship and methods of construction as may seem to them best calculated to insure pavements of the greatest ultimate economy and the most satisfactory service to the public.

## WICHITA'S PAVING RECORD

WE have received the following self-explanatory letter, dated March 27. The amount of paving done certainly indicates remarkable enterprise for a city of 55,000 population:

Editor MUNICIPAL JOURNAL,

50 Union Square, New York City.

DEAR SIR—Your issue dated March 21, containing list of paving done in 1911, states that the figures given by Wichita "probably include all paving to date." As a matter of fact, our annual report was not completed at the time your letter was received, and I find that instead of 354,653 square yards, as reported to you, we actually laid 395,579 square yards of all kinds of pavements during the calendar year.

Wichita had 1,262,153 square yards of pavement January 1, 1912.

Trusting you will give this statement a place in an early number, I am

Yours very truly,

P. L. BROCKWAY,  
Assistant City Engineer, Wichita Kan.



## NEWS OF THE MUNICIPALITIES

Current Subjects of General Interest, Under Consideration by City Councils and Department Heads—Streets, Water Works, Lighting and Sanitary Matters—Fire and Police Items—Government and Finance

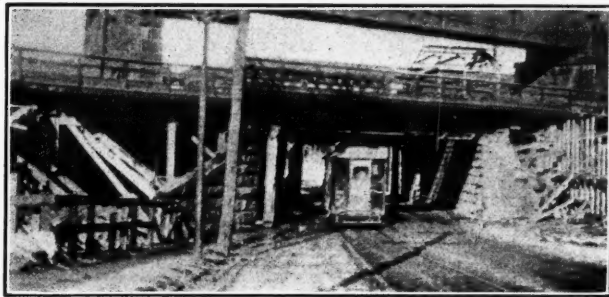
## ROADS AND PAVEMENTS

## Road Work by Prisoners

Trenton, N. J.—Senate 308, by Mr. Gebhardt, making it possible for boards of freeholders to put to work on the public roads inmates of county penal institutions, and to secure for a similar purpose inmates of the State penal institution, has been passed without opposition in the Senate.

## Work Resumed on Bridge

Pittsburgh, Pa.—Work will soon be started on the completion of the partially constructed Pennsylvania Railroad bridge over the Fifth avenue extension, Point Breeze,



Courtesy Pittsburgh Dispatch.

NEW PENNSYLVANIA RAILROAD BRIDGE.

which, with the widening of the street at that point, will make one of the big and much needed improvements in that section. The work, which was started last October, will cost in the neighborhood of \$150,000. The new bridge is to be one of the modern type of steel and concrete.

## Concrete Paving for State Roads

Newburgh, N. Y.—The Schunemunk Company of Highland Mills and Harriman, which is extensively engaged in good roads building, has the specifications for putting down the concrete paving which is proving so successful in Michigan and other Western cities. Mr. Hall, of the company, stated that the Highway Commission of this State has arranged to build 400 miles of highway of this material, which is as great an advance over macadam as the latter was over the ordinary dirt roads.

## Convention Pledges Aid to Highways

Sacramento, Cal.—Lacking only a formal vote by the county board of supervisors, Sacramento county is on record as being pledged to furnish rights of way and to construct bridges for any and all roads ordered by the State Highway Commission, under the \$18,000,000 highway bonds, within this county. The Sacramento County Good Roads Convention, the official highway body of the county, has indorsed this action and pledged its support in securing these things, and representatives of good roads associations, civic bodies and official bodies have adopted resolutions pledging themselves to work to bring about these co-operative steps demanded by the State Highway Commission.

## To Pave Street With Gold

Colorado Springs, Col.—The J. F. Hill Construction Co., Chicago, which has the contract at \$350,000 for paving streets in the business section, has contracted for 20,000 or more tons of Cripple Creek gold ore as a concrete basis. The ore is worth \$1 to \$3 a ton for its gold content besides its value as a filler. When the paving is completed Colorado Springs' citizens will walk and drive over good yellow gold approximating \$100,000. The ore comes crushed over the Short Line Road exactly as it is fed into cyanide mills in small squares and oblongs, and in this way it is much better than round bowlders and much cheaper than bowlders crushed by hammers. The availability of the ore in any quantity makes it indispensable in all concrete work in Colorado Springs.

## Three Miles of Sidewalk

Topeka, Kan.—Seven hundred loads of sand have been hauled and placed on the ground, grading outfits will begin work, and actual work of constructing nearly three miles of cement sidewalk has been started in Pinehurst. Never before in the history of Topeka has an addition been put on where so much cement sidewalk has been constructed all at once as will be laid in Pinehurst between now and the 1st of July. It means that 60,000 square feet of granitoid walk will be put in by the Elmhurst Investment Co., one of the many things being done to make Pinehurst the most desirable suburban residence district in the West.

## Main Roads Are Damaged

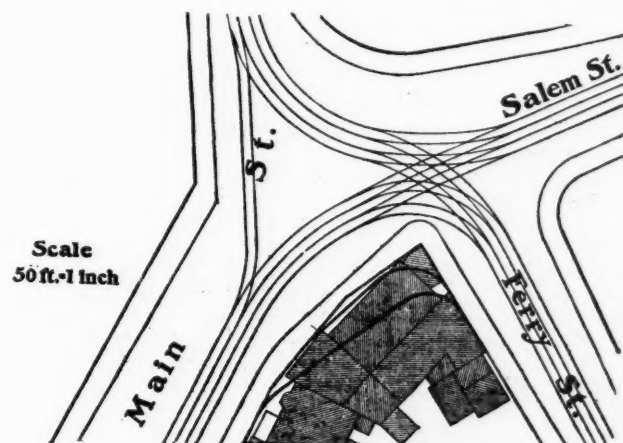
Westfield, N. J.—County Road Inspector J. W. Fink, of Westfield, says that the condition of the roads at the present time is the worst in his eighteen years' experience as inspector. Morris avenue, North avenue, South avenue and Terrill road have been badly damaged by the frost coming out of the ground, and Mr. Fink says the worst is yet to come, as the frost is not yet all out of the roads.

## Used Iron Ore for Road

Poughkeepsie, N. Y.—Albert Stickles, of Pine Plains, at a recent conference of road officials in Poughkeepsie, described what a town should have in the way of machinery. As a necessary part of equipment he had found that a dump wagon loaded with stone can be handled from 20 to 25 per cent. cheaper than the smaller dump carts. He told of a stretch of road two and a quarter miles long made last year for \$2,100 a mile. This stretch is 14 feet wide, the foundation of which is what he described as iron ore, put down just as it was quarried and rolled in with a ten-ton roller. This has a top dressing of gravel from 4 to 8 inches deep. About 3,000 loads of the ore were used as a filler. The road so far had shown hardly any wear. There was another piece, he said, put down five years ago with the same material. This road is in an excellent state of preservation, and while the ore is not quite so good as crushed stone, it is much cheaper. He told the superintendents and supervisors that they would be surprised to see how the ten-ton roller crushed up the ore.

## Cutting Bad Corner from Public Square

Malden, Mass.—The finance committee of council has approved the plan for rounding off the corner of Salem



and Ferry streets in the public square, as shown in the illustration, at a cost of \$7,500. The improvement has been under consideration for a number of years and was considered along with another plan involving greater expense.

### Says Broad Sidewalks Would Save Much Paving

Baltimore, Md.—Appealing for wider and more attractive sidewalks on the less important streets of the city. Major Shirley, of the Topographical Survey Commission, has submitted plans to Mayor Preston whereby many sidewalks may be widened at a saving to the city of \$17,600 for every mile of new paving. If the roadway, says Major Shirley, were narrowed down from 39.6 feet to 24 feet, thereby allowing for three streams of traffic, the city would save five yards in width for every one in length. Putting the paving, in round numbers, at \$2 per square yard, there would result a saving of \$10 per running foot, or \$17,600 for every mile.

### Suggests Method to Roughen Block Street

Lexington, Ky.—The city officials here have been trying for some time to find means to keep wooden block streets from being so slippery as to be dangerous, and Mayor Cassidy has just received a letter from Street Commissioner Jas. C. Travilla, of St. Louis, which promises a solution of the problem. Mr. Travilla sends the formula for an oil which is used by his department. The oil is sprayed on the street and the surface covered with a sharp sand. The oil holds the sand in place and the street soon resembles an asphalt surface. It has been used in St. Louis for several years and works well there. The cost of the treatment is said to be about 2 cents per square yard. The trouble with these streets has been so great in the past that several times the question of tearing them up and replacing with some other kind of material has been under consideration.

### Extending the Street Pavement System

Houston, Tex.—One of the improvements that Houston is much interested in, because it has a direct bearing upon the extension of the pavement system of the city, is the work now under way of paving Houston Heights Boulevard. It means, in reality, an extension of the system of paved streets of the city. The connection is with the Washington avenue pavement, going northwest as far out as Brunner. At the point of departure the County of Harris is putting down through contract with the Creosoted wood Block Paving Co. of New Orleans a pavement of creosoted wooden blocks. It will be of ample width, from Washington avenue pavement to White Oak bayou, a distance of perhaps two thousand feet, to the bridge over that stream, which, in turn, leads to the brick pavement that will be laid on the boulevard, a distance of about nineteen blocks. The contract for the block pavement was let by the county for \$22,249.05. On this section the work has already been begun, and the contracting company will push it through as rapidly as possible. The contract for the brick pavement was let, under a bond issue of \$180,000, for the sum of \$114,845.50, to E. J. Overly & Co., and they are now at work in the execution of their contract. Mr. E. J. Overly, of Joplin, Mo., the head of the company, is in the city personally directing the work.

### Road Work Ready for Early Start

Pittsburgh, Pa.—Provided the auditor general will give the word to go ahead, this spring will see dirt flying in all parts of the State on the immense schedule of new roads as mapped out by State Highway Commissioner E. M. Bigelow. According to Mr. Bigelow all he is waiting for to let contracts for several million dollars' worth of road building is assurance from Auditor General Sisson that finances are available to proceed. Included in the money available for roads to be built entirely at the cost of the State, according to Commissioner Bigelow, will be approximately \$3,000,000, representing revenue from automobile licenses, which it is expressly provided shall be devoted to road building. The total it is hoped to have authorized either for State roads or for thoroughfares to be built in conjunction with townships and counties will reach \$9,000,000. Mr. Bigelow said he could not venture any actual prediction of the extent of his summer's work, nor could he go into detail as to the points at which work would be first concentrated, until after his conference with the auditor general. He declared emphatically, however, that so far as the department's progress on plans and specifications, and its readiness to let immediate contracts for an early start, he stood in readiness to proceed at once. He expects to complete all work authorized during the present year, he added.

### Street Paving at Denison

Denison, Tex.—Indications now are that the end of the present year will find Denison to be one of the best paved cities of its size in Texas, if not the entire Southwest. Five and possibly six blocks are to be paved with brick within the next few months in addition to the ten or twelve miles of resident streets which will have been macadamized by the end of the year.

### Auto Owners Will Fix Roads

Spokane, Wash.—William D. Vincent, cashier of the Old National Bank of Spokane and chairman of the agricultural committee of the Washington State Bankers' Association, is lining up 1,000 owners of automobiles in this city to drive into the country on Good Roads Day, April 12, and fill the ruts and chuck holes in the public highways. Most of the drivers will be accompanied by from one to three laborers and a complement of picks and shovels. Frank W. Guilbert, vice-president and secretary of the Spokane County Good Roads Association, is assisting in the work and results are expected. Mr. Vincent thinks more real benefit will follow the day on the roads than could be expected from a long program of technical addresses and good intentions at county or State meetings. District maps, showing the condition of the roads in the territory tributary to Spokane, are being prepared and will be distributed among owners of automobiles, so there will be no duplication of work.

### Convicts Available for Road Making

Jefferson City, Mo.—April 1 three hundred able-bodied convicts will be available for any county that desires to employ their labor on the public highways at the expense of their "feed and keep." The warden of the penitentiary has received no indication that any applications will be made for the labor of these convicts, although in no other way could the highways be improved so cheaply. Governor Hadley is of the opinion that as soon as the weather settles and the work of road building can be resumed more than one county will be anxious to "hire" the labor of these convicts, and he feels sure a single experiment will provide a solid plan for working the bulk of the male convicts at road building. Under the act passed by the last legislature providing for the gradual abolition of the convict system of working convicts, provision is made under which they may be employed upon the highways, starting with 300 next April and adding 300 each subsequent year.

### State Highway Experts Tell of Good Road Making

Poughkeepsie, N. Y.—County Engineer A. C. Rappelye at the evening meeting of the town superintendents and supervisors, which had gathered at two sessions to meet representatives of the State Highway Commission, gave the following statistics relating to highways in Dutchess county: "Our total road mileage in Dutchess county in the twenty towns, which was measured in the summer of 1909 under the direction of the town superintendents, totaled 1,617 miles. Of this amount, up to date we have 93 miles of State and county roads constructed, leaving 1,524 miles of highways to be cared for by the twenty town superintendents of this county. During the past year there was expended for highway work \$99,317, of which \$34,702 was State aid. In the bridge work twenty-four concrete bridges were built, costing with repairs to bridges \$24,079. The sum of \$3,163 was expended for purchase of machinery and repairs; \$5,843 was expended in miscellaneous ways, making a total of \$132,400 expended for maintenance of these 1,524 miles of earth, gravel and stone roads, with new bridges and permanent improvements. The average per mile expended was a little over \$60 per mile on our roads proper, and the following was accomplished: 71,428 cubic yards of crushed stone, gravel, earth, slate and cinders were put on the roads; 165 water breaks were removed; 123 sink holes filled; 80 roads widened; 53 places where a large amount of rock was removed; 35 hills cut down; 70 hollows filled in; 15 concrete sluices of less than five feet span put in; 130 cast iron sluices and 61 corrugated galvanized metal sluices put in; 111,129 feet of bridge plank was bought at an average price of 3.7 cents per foot. It cost in 1910 for snow removal and opening roads \$9,525. Last year it was but \$746. Total number of days worked by town superintendents, 4,138, amounting to \$13,749.47. Average per town 207 days, \$687.47."



## SEWERAGE AND SANITATION

### Health Board Is Created

Kenosha, Wis.—The city council has created a non-partisan board of health and provided for the appointment of a public health commissioner, a health officer and a nuisance inspector, all to have police authority. The ordinance necessitates that the commissioner shall be a licensed physician and that he may not engage in public practice. An appropriation of \$4,000 is made for the new department. The appointments will be made by the mayor within ten days.

### Watervliet Has Fever Epidemic

Watervliet, N. Y.—The poor supply of water with which the residents of this city have had to contend during the last four months has had a telling effect on the general health of the community. The result is that the physicians are extremely busy trying to stamp out epidemics of scarlet fever, typhoid fever, and if possible to head off a threatening epidemic of spinal meningitis. There are now in this city more than 60 cases of typhoid fever and almost as many of scarlet fever. The latter disease has concentrated its efforts in the southern part of the city, where there have been two deaths from it. The local health officers are extremely careful about scarlet fever and meningitis and have quarantined a large number of houses.

### Wage War on Public Drinking Cups

Topeka, Kan.—To prevent the spread of epidemic diseases the State Board of Health has issued an order that public drinking cups must be removed from all the cities of Kansas. City officials were notified the order must be enforced rigidly and business men were requested to remove common drinking cups from their places of business.

### Typhoid Warning at Logansport

Logansport, Ind.—The city's supply of drinking water is practically cut off owing to the condition of the water following the flood in Eel river, which is the source of the city's water supply. The high water swept away barns and outbuildings for miles above the city, and seeping back into the river was pumped into the mains. Dr. John Bradfield, secretary of the city health board, has issued a warning to citizens to refrain from drinking the water. The Cass County Medical Society has supplemented the action of the city health board by publishing a statement declaring that an epidemic of typhoid will follow the flood unless the use of city water for drinking purposes is stopped. The three artesian wells which were recently drilled by the city have been surrounded by crowds and water carts are supplying hundreds of homes with water from the wells.

### Laying Sewer Pipe in Westmoreland

Texarkana, Ark.—The work of laying the sewer system in Westmoreland Place, the latest residence addition to Texarkana, is well under way and is being pushed forward at the most rapid rate, in order that it might be completed at the earliest possible moment. The system will include its own septic tank, which will make it independent of the city's sewerage system. Approximately \$4,000 will be expended in installing this system, and most of the pipe will be of 6 and 8-inch dimension.

### Will Give Prizes for Best Samples of Milk

South Bend, Ind.—Giving of prizes and the presence of a national authority on clean milk will be two things which the healthier city committee of the Chamber of Commerce will depend upon to add interest to its pure milk campaign to be inaugurated in South Bend soon. The contest will be held among the different milk dealers and the giving of prizes will, in the estimation of the committee, spur the dealers to even more care in providing the city with the very best and cleanest milk obtainable. Just who the national authority will be who will come to the city is not yet determined, nor is it definitely settled that one can be obtained, but Grand Rapids, Mich., and Cleveland, O., have each been successful in securing a man, and it is believed South Bend can be equally fortunate. The campaign is being directed by the healthier city committee of the Chamber of Commerce, of which Dr. H. M. Miller is the chairman.

### Electric Purification To Be Tried

Eldorado, Kan.—Sewage at Eldorado will be disinfected by electricity. The engineers of the State university are making a test of a system by which waste is disintegrated and all organic matter destroyed by an electric current.

### Value of Cleanliness

Plainview, Tex.—Plainview is particularly proud of her low rate of mortality. D. W. McGlasson, recorder for the local Praetorian lodge, states that not a death has occurred among its membership of 225 during the past year. He also stated that the membership of the First Baptist Church is 450, and there has not been a death among them in the past twelve months. Earle C. Keck, secretary of the local B. P. O. E. lodge for the past three years, states that with a membership running well above 100, not a death has occurred in the Elk herd since the date of their organization. Plainview urges every town in West Texas to put in a sewer and water works system, for her vital statistics have shown up almost perfect since the installation of same three years ago.

## WATER SUPPLY

### Water Works Department Has Good Year

Hamilton, O.—City Auditor H. A. Grimmer has completed his annual report of the city water works for the year 1911. It shows that the receipts during the year were \$49,493.89; expenditures, \$30,168; deficits, \$2,271.49; total gain, \$21,597.38. The heaviest receipts by months were April, \$7,365.38; May, \$4,139.82; July, \$5,770.90; October, \$9,394.81. The deficits occurred in June, August, September and December. The total net income for the year was \$19,325.89. The sum of \$25,000 was turned over to the sinking fund trustees, which does not appear in the expenditures; \$3,701.67 was paid out for new services and \$3,701.67 for new meters out of the earnings of the plant, and \$23,372.64 for extensions, the money being derived from bond issues. There were 5½ miles of extensions put in, 385 new services, making a total of 74.5 miles of underground pipe and 5,745 taps for services. Free water was furnished for fire hydrants, engine houses, school houses, city buildings, parks, library, etc., to the amount of \$30,410. The total valuation of the water works plant is \$1,024,871.50.

### State Board of Health Says Water Is Impure

Gouverneur, N. Y.—The State Board of Health has notified Village Health Officer S. W. Close that Oswegatchie River water is unfit for use for drinking purposes without being boiled. The local health authorities are endeavoring to notify all persons using the water of the State Board's decision. When Dr. Close's last report went to Albany it showed that there were several cases of typhoid fever in Gouverneur, and the report attracted the attention of the Albany officials. The village could easily secure a pure supply of water by going to Sylvia Lake, six miles distant. This body of water is one of the purest in the State, and is high enough so that all necessity of a pumping station would be done away with. Sylvia Lake water has been agitated here for a number of years, almost since the present system of water works was installed about twenty years ago.

### Better Water for City

Rome, Ga.—The muddiness of Rome's city water is about to be remedied. Col. A. W. Walton, superintendent of public works, has placed an order with the American Water Softener Co., of Philadelphia, for an additional filter tub, increasing the capacity of the filter plant by 500,000 gallons per day. Rome is growing with such rapidity that it is hard for her filter station to keep pace. Only a year ago the consumption of water in Rome was only a million and a half gallons per day. It is now averaging from two and a quarter to two and a half million per day. The present capacity of the filter plant is only two million gallons per day, and it is therefore impossible to filter enough to entirely supply the city. Hence the murkiness, not to say muddiness, of the public water. There are four filter tubs in the station at Fort Jackson. Room was provided when the building was constructed for a fifth tub. The contractors agree to have it installed within five weeks and then the daily filtering capacity will be two and a half million gallons. The new tub will cost installed \$2,300, several hundred dollars cheaper than the others.

### Mains Bursting Under Pressure

Watervliet, N. Y.—Now that the reservoirs have been filled by the rains, and there is plenty of water in storage, the Watervliet Hydraulic Co. is endeavoring to give the city the pressure desired, but the old mains will not stand it and are bursting in several parts of the city. So serious was the break in a two-inch line in the rear of Broadway, near Ninth street, that the employes took three days to repair it, and the result was that two more square blocks were without water service or fire protection for the time being. Minor breaks caused by the frost in different parts of the city have also made it necessary to diminish the supply in various districts. It would cost at least \$50,000 for the hydraulic company to put its underground system in proper shape.

### Water Supply Ample

Dallas, Tex.—With nearly half a billion gallons of water in the new White Rock Reservoir and with Turtle Creek, Bachman's and Record Crossing Reservoirs filled to overflowing, Dallas is declared to be in better shape as to water supply than in several months. Rains of the past few days, although not so heavy on the White Rock watershed as in Dallas and the Trinity Valley, have added seven inches to the depth of the water in White Rock, which already was estimated to contain 350,000,000 gallons. At the stage at which White Rock is standing now, it is estimated that each additional inch rise means 15,000,000 to 20,000,000 gallons, so that the total supply now impounded by the city's reservoirs may be said to exceed 1,500,000,000 gallons. At the rate at which Dallas is using water at present, about 9,000,000 gallons per day, this supply would last 160 days, allowing considerable part of the supply to evaporate. But it is pointed out by Commissioner Nelms that for two or three months the city will not have to draw upon its impounded water supply at all, but can simply pump as much water into Turtle Creek from Record Crossing each day as is being pumped out of Turtle Creek into the city mains. He thinks the Elm Fork of the river will flow enough water for several months to allow 9,000,000 gallons to be drawn out each day without reducing Record Crossing below the level of the dam. According to this view, Dallas will have plenty of water until the end of the year even without rain.

### Will Have Best Water System in State

El Paso, Tex.—In two months' time El Paso will have the best municipal water works system of any city in the State of Texas, both as regards fire protection and domestic service. Will E. Race, superintendent of the waterworks, is authority for this statement. At present there are twenty-three wells on the mesa with an average depth of 600 feet, and most of the water that goes to consumers in El Paso sees the light of day but a moment, some of it never gets in contact with the open air until it runs out of the pipes in some El Pasoan's home. It is pumped from the wells into a conduit and thence it is pumped into the mains, only the oversupply going into the reservoir for retention until such time as the supply runs a bit low, and then it is turned into the mains. An air compressor, which is to cost \$25,000, is being installed by the Allis-Chalmers Co. at the city water works on the mesa. It will be in working order by April 1, according to contract. This will force the water from the bottoms of the wells into pipes and then into the conduit. There will, when this compressor is completed, be a capacity of 7,500,000 gallons of water per day, which is doubling the present capacity. When this is installed and the pump at the Watts well has been put in perfect working order (it is now being installed), El Paso will have a key rate of 20 cents on its fire insurance, which will make it the best risk in the whole State of Texas and give to it the lowest insurance rates. The water works system of El Paso, according to Mr. Race's estimates at this time, is worth \$1,200,000. The city paid \$927,000 for it to the International Water Co., a private corporation, taking over the plant on Oct. 1, 1910. Since that time big improvements have been made in the buildings on the mesa, twelve new wells have been sunk and mains have been extended in every direction.

### Malone Celebrates New Well

Malone, Tex.—The artesian well brought in at this place tested out more than 1,000 barrels in twenty-four hours. Pure artesian water is flowing over a standpipe fifty feet high. The event was celebrated by the blowing of whistles until a late hour.

### Will Install Meters at Mills

Cohoes, N. Y.—The water works authorities are to place meters on the intake pipes of the different mills, so that they can be charged for the amount of water they use. During the past winter a large amount of water was wasted and for a time a water famine was threatened as a result. The water board is of the opinion that the meters may tend to check the waste. Superintendent Kniffin, of the Water Works Department, has been instructed to submit a list of the mills to the water board, so that the meters may be placed in position.

### Water Works Uninjured by Flood

Augusta, Ga.—The Augusta water works have not been damaged in the least by the high water, and plenty of water is being furnished the entire city. This is very different from 1898, when the water works were paralyzed for more than three weeks. A statement from an official of the Water Works Department was to the effect that the department had not been damaged, and a full pressure will be maintained. The pumps are not working, and have not been since the water rose, but they will be started up very soon. There is a full head of water in the settling basin, and no reason for alarm on the part of the people of the city. The reason for the shortage of water after the flood in 1908 was the break in the canal, which caused all of the water to leave the canal.

### Tests Show That Water Is Good

Montgomery, Ala.—Bacterial counts in city water are lower than at any time during the past six months. This is the keynote of the statement filed with Commissioner Walter R. Brassel, by City Bacteriologist B. A. Taylor. "From the examination it will be seen that the general water supply at the present time is free from contamination of the colon bacillus," continues the statement. The analyses and examinations were made by Mr. Taylor at orders of the department of sanitation and health and follow the report of Dr. E. M. Mason, filed about two weeks ago, which held that Montgomery water had been affected, but that contamination at that time—fifteen days ago—was less than at the time when State Bacteriologist B. L. Moss reported to the committee on public health. A specimen of water was taken from a hydrant by Dr. Taylor, March 3. This showed that there was a bacterial count of one hundred and twenty, compared with the 250 or more, reported by the state bacteriologist. No colon bacillus has been found in ten cubic centimeters of the water secured from a hydrant.

## STREET LIGHTING AND POWER

### Committee Reports on Cost of City Lighting

Fremont, Neb.—The cost of the electric lighting system of Fremont was \$16,544.41, according to the report just made by the committee of business men, which awarded the contract for the work. This included the installation of 127 standards, bearing 635 tungsten lamps, and the underground conduits.

### Contract Department of Municipal Light Plant to Open

Cleveland, O.—The contract and soliciting department of Cleveland's big new municipal electric light plant will be ready for business about May 1. The department will be in a position to seek power business in the great factory belt along the water front on the East Side and there will be a campaign for downtown business as well. In the meantime sites are to be fixed for two downtown distributing stations. There will be one sub-station in the Newburg section and a similar station in the northwest section of the city. The old South Brooklyn plant will also be used as a sub-station. For the present there will be no change in the use of the old Collinwood plant. Draftsmen under Chief Engineer Ballard are engaged on plans for the high voltage underground system and the machinery for the new \$2,000,000 plant adjoining the Kirtland pumping station.



**White Way for Fitzgerald**

Fitzgerald, Ga.—Fitzgerald is going to have a "white way." Material has been ordered by the Water, Light and Bond Commission for light posts for both sides of the four blocks that are now undergoing paving with vitrified brick. There will be forty posts, each carrying five Tungsten lamps of 60 candlepower.

**Pittsburgh Men Inspect Lighting**

Rochester, N. Y.—A committee of three appointed by a Civic Improvement League of Pittsburgh, Pa., has been visiting Rochester to inspect the lighting system. The committee consisted of a city official, director of school and a representative of the Pittsburgh Lighting Company. They are on a tour of inspection, and prior to their visit to Rochester visited Buffalo and Toronto. The members left on their way to Syracuse, from where they will leave for New York City and New Haven. After a thorough inspection of the city's street lighting system, the committee was strongly impressed with the new design of street lamp now in operation on Main Street West, fastened to the side of the Duffy-Powers store on the corner of Fitzhugh Street North. They declared that this type of lamp, in their opinion, was the most efficient for the cost than any they had seen, and favored it as against the type now lined upon Clinton Avenue North, in front of the Rochester Railway and Light Company building. The design in question constitutes a cluster of three inverted luminous magnetite arc lamps, bracketed from the side of the building, twenty feet from the ground.

**Accident to Dynamo Leaves Town Without Light**

Ellensburg, Wash.—The city will be in total darkness for several weeks, according to Superintendent of the Municipal Light Plant E. L. Butler. One of the dynamos in the sub-station burned out, and it will be impossible to light the streets until new parts arrive from the East.

**Decreased Consumption of Municipal Current**

Tacoma, Wash.—Increased illumination with decreased consumption, brought about by the invention of the tungsten lamp, which has wrought such a revolution in the electrical world during the past two years, is responsible for a decreased revenue in this department of the city, without decrease in the number of subscribers. Since the acquisition of the local gas plant by the Byllesby Company the city has lost some consumers of electricity, this for the reason that the company has instituted and continued a policy of installing gas arcs free of charge to the consumer, and in addition has furnished all labor and piping at its own expense. In this manner the gas company has spent in the neighborhood of \$10,000. This is the first time the gas manufacturers have ever competed for this business. Another cause which has contributed to the decreased consumption of electricity has been the closing of the saloons of the city at midnight since Aug. 8, 1911, whereas prior to that time they were accustomed to remain open all night. The dance halls of the restricted district, always heavy consumers of electricity, have been closed, with a resulting decrease in the amount of current consumption. Why poorly lighted sections of the city, supplied by small wires, have not been changed is readily understood when it is explained that when the new plant is installed the present mixed, single and two-phase 2,300-volt lines will be changed to four-wire 4,000-volt three-phase lines. It would have been a useless expenditure to have corrected this and then have to change again when the new system is installed. Owing to the fact that certain buildings of the city have their own heating systems and can, at very small expense, add a lighting plant, the city has lost a certain additional amount of revenue in the light department. It is self-evident that such loss is caused by no dissatisfaction with the city service but is due entirely to the business man viewing the lighting question in his particular case from a purely economic standpoint. Since the employment by the city of a solicitor for electric light and power, considerable new business has been coming into the city that would not have been obtained otherwise. In this way it is hoped that before the new power plant at LaGrande, on the Nisqually River, is completed the city will have consumers for a great deal more electric current than originally.

**FIRE AND POLICE****New Style Uniforms for Police**

Pasadena, Cal.—The new summer uniforms for the Pasadena police department members will be worn for the first time in public on May 1. The uniforms will be an olive drab in color, and will be of a military cut. The coat collars will be of the stand-up variety found on military uniforms. The material will be light, so as to assure comfort in the heat of the summer. The usual brass buttons will be used. Instead of the heavy helmets, the policemen will wear neat-appearing caps.

**Wants Fire District**

Isleton, Cal.—An effort is being made to have a fire district established here. The matter has been referred to the District Attorney and the people will take up the plan at once. There is now a volunteer fire company and a hose wagon. With county supervision it is believed better service can be secured.

**Footprint System for Los Angeles**

Los Angeles, Cal.—A footprint system of criminal identification will be used by the police of Los Angeles in the future, according to an announcement made by Chief of Police Sebastian. Experiments were made by the detectives here, with the result that the application of the Bertillon system to the feet was decided upon. The experimenters declared there was less chance of changing the appearance of the feet than that of the hands, and therefore that pedal identification was preferable to manual.

**Checks Up on City Loot**

Chicago, Ill.—A systematic check of the thousands of dollars' worth of stolen property that the police recover yearly has been devised by Chief of Police McWeeny. The establishment of the scheme by the police executive solves, he says, a problem that was constantly bothering the police. "The system is this," said the chief, "When stolen property is recovered by a policeman he immediately gives the desk sergeant an inventory of the property. Triplicate copies are made of the list and one is given to the policeman, the desk sergeant retains one and the city custodian is furnished with the other. The city custodian thus knows what property to expect from the policeman, and he can return it to the owner unless it is unclaimed. This will avoid possible laxity in the disposition of such valuables."

**Vote for Fire Protection**

St. Paul, Minn.—Advices received by W. T. Cox, State forester, indicate that towns in the northern part of the State are taking advantage of the law passed by the last Legislature authorizing them to levy taxes for local fire protection and prevention. At the last elections many voted on the question and carried it. The town of Stuntz, St. Louis County, combined with four townships and voted a levy that will net approximately \$2,500.

**Eight Hours Only for Police**

Albany, N. Y.—Attorney General Carmody in a recent opinion holds that commanding officers cannot assign sergeants, roundsmen and patrolmen in first and second class cities to more than one tour of duty exceeding eight consecutive hours in each twenty-four hours, and that such officers cannot be required to perform drill duty or to receive instruction in drilling in addition to their regular tour.

**Women Will Have Police Authority**

South Bend, Ind.—South Bend will not only have a woman police officer in the near future, but a woman matron with police power will be stationed in the union traction station, for the protection of women and girls, if an agitation launched by the women's clubs of the city bears fruit. The club members are so determined the plan shall go through they have expressed their willingness to employ a matron and pay her out of the club treasury, if the city or railway companies cannot be induced to hire someone. The woman police officer will have similar duties on the downtown streets. In connection with the agitation the city council recently passed an ordinance against flirting.

# AUTO APPARATUS NOTES

## New York Receives Webb Engine and Ladder Truck— South Bend Receives Powerful Chemical of Un- usual Design—Atlanta Would Motorize— Two English Types

Greenwood, S. C.—The Seagrave Co., Columbus, O., have agreed to deliver the auto combination hose and chemical, recently ordered, in time for the Firemen's Convention in June. It will have a six-cylinder engine, weighs 75,000 lbs. and costs \$5,500.

Denver, Col.—In line with the progressive cities of the country the municipality of Denver has, during the past few years, been steadily doing away with horse-drawn equipment and substituting motor-propelled vehicles where the latter can be used to advantage over the old method. The auto patrol, a 40-horsepower car, has been in operation now for three years and has been a wonderful aid to the city in many ways. Denver has but one police station, the central headquarters located at city hall, though a number of other cities of our class maintain one or more branch stations. The time was approaching when, owing to rapid growth, Denver would have had to build and operate at least one branch police station. But the fast motor-driven patrol has obviated the necessity of going to this expense, as the city can be covered very well by the one "wagon" out of the city hall station, whereas at least three horse-drawn vehicles would be required to do the work if branch stations were operated. The patrol makes on an average of 20 runs daily, and the remotest sections of the city are reached in minutes, where under the old system it took hours.

East St. Louis, Ill.—East St. Louis has added to its already efficient fire department a Webb motor fire engine. This engine is to be placed in a district where the runs are long and hard. Chief Tobin figures that this apparatus will do the work of two horse-drawn companies.

South Bend, Ind.—The arrival of the new motor chemical in South Bend will mark the beginning of the end for horse-drawn vehicles in the fire department. The machine, which was manufactured according to specifications drawn up by the department, by the Thomas B. Jeffrey Company, of Kenosha, Wis., will immediately upon its installation in the regular service lessen the work of the entire department, inasmuch as it will respond to every alarm, still or box, according to announcement by Chief Wilfred Grant. The South Bend department chemical was purchased by the city at a cost of \$5,000 and was said by Chief Grant to be the only piece of fire equipment of its kind to be provided with a double tank and double line system. Many chemicals are equipped with two tanks, but none with two lines of hose. The South Bend machine possesses two tanks of 70 gallons capacity each, and four small fire extinguishers capable of holding contents of six and three gallons. The hose attached to each tank is 250 feet long, and in an emergency, where additional length of hose is required, the two can be coupled and the pressure of both tanks brought to bear on a threatened point, a small pipe with a valve connecting the two reservoirs. In the ordinary chemical truck the contents of only one tank can be directed at a fire at a time, while both tanks can be emptied simultaneously by the two-hose arrangement. An extra charge of the chemical will be carried and the tank can be refilled while the company is at a fire. If a contingency should arise demanding more pressure, the contents of one tank could be directed into the other by means of the connecting pipe. It will also be possible to connect the big hose with a hydrant and send a stream of water on a blaze without necessitating its passage through the reservoirs.

Newark, N. J.—While leaving the house in response to an alarm, the Webb automobile engine of No. 21 Company, located in the Vailsburgh section, was put out of commission in an odd accident. The old engine, horse drawn, is now being used. When the auto engine left the house in South Orange avenue there was a grinding noise and it stopped. Investigation revealed that one of the firemen had hung a coat on one of the rear wheels. When the engine was started the garment wrapped about the mechanism, broke the chain and did other damage that it will take several days to repair. When it was seen that the auto could not proceed to the blaze a call was sent in for an extra engine.

Quanah, Tex.—The fire department has recently received a combination chemical engine, which has given so much satisfaction that the mayor, W. J. Mulhey, and Chief J. E. Magee have executed the following certificate:

Quanah, Texas, March 13, 1912.

### TO WHOM IT MAY CONCERN:

This is to certify that the Automobile Combination Chemical Engine and Hose Wagon, furnished to the City of Quanah, Texas, by the Northern Fire Apparatus Company of Minneapolis, Minn., has fully demonstrated its ability to develop more than sufficient power to pull through mud under the worst conditions that have existed in this county and city for many years.

After putting this apparatus through various tests, which all proved to be satisfactory, the machine was run into a mud hole one block long, where the apparatus sunk to the hubs, but easily negotiated this difficulty.

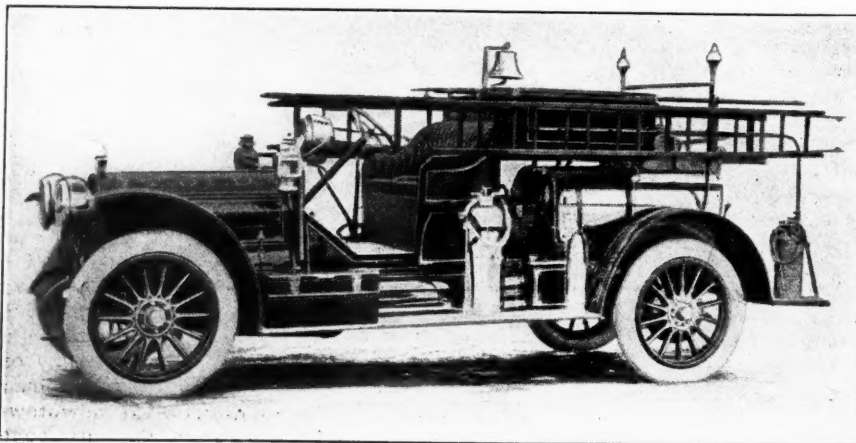
At the time this final test was made, the apparatus was carrying ten men in addition to the full chemical engine equipment, consisting of two 35-gallon tanks, charged and ready for use, together with 200 ft. of chemical hose and nozzle; also two extra 5-gallon extinguishers and necessary 2½-in. fire hose and other minor attachments, which is the full equipment that this apparatus carries in service for this city.

Before purchasing this apparatus, other makes were considered, and it was finally decided that the Northern would be the most satisfactory, as to strength of construction, general equipment and the ability of its engine to carry the load under most severe conditions, which facts have been proven to our entire satisfaction.

It has also been conclusively demonstrated by this apparatus that solid tires are satisfactory, as there is very little jolting when running over the roughest ground.

Butler, Pa.—Seven members of the Connellsville Fire Department went to Butler recently for the purpose of investigating the auto fire truck in use at the Central fire station, as well as to examine the other fire-fighting equipments and the buildings of the town department. In the party were C. M. Stoner, Samuel Brant, William Work, V. J. Clark, J. F. Koonce, William Bishop and James Millard. Following the inspection of the Central fire station, the Connellsville councilmen were given a demonstration of the auto truck, the entire party being taken on board the machine, and with Chief Lefevre, Dr. R. A. Thompson, chairman of the fire committee, of council, and a force of the firemen from the Central station, were given a trip over the city and the possibilities of the auto were shown. The visiting councilmen were well pleased with the demonstration. As a result of their visit here, the councilmen will strongly recommend that Connellsville invest in at least one auto fire truck for use of the department in that town.

Ancon, Panama.—The United States Government is about to receive from the Webb Motor Fire Apparatus Company two of its first-size rotary motor fire engines, one for shipment to Cristobal and one for Ancon, Panama, Canal Zone, making four of this type of Webb engine thus far purchased by the Government.



Courtesy South Bend Tribune.

SOUTH BEND AUTO-CHEMICAL



Hutchinson, Kan.—There was much rivalry among the competitors at Hutchinson, Kan., recently for the contract for motor fire apparatus. The Webb Motor Fire Apparatus Company, of St. Louis, while not the lowest bidder, was successful in receiving the award for a combination chemical and hose motor car and also for a 700-gallon motor pumping engine, this apparatus to be the same in all details as that so successfully used by Wichita, Kansas City,

Evansville, Ind.—Mayor Charles Heilman, members of the Board of Public Safety and Chief Grant, of the fire department, have gone to Indianapolis to inspect the motor fire apparatus in use there. From Indianapolis the Evansville party will go to Columbus and possibly to Cleveland and Chicago. The Seagrave factory will be visited at Columbus and a number of the machines there will be inspected. It is probable that a machine capable of carrying ten men will be purchased by the board of safety. There are fourteen men at No. 1 hose house, and a motor chemical and hose wagon capable of carrying ten men would leave two men each for the engine and truck. The New Orleans (La.) department uses the Seagrave machine, and in a letter to Councilman Millerlei, Capt. A. Hanahan, of the New Orleans department, said that the expense of running one of the machines for the last three years had been but \$8.25 a month. The La France and Pope-Hartford machines will be inspected at Indianapolis.

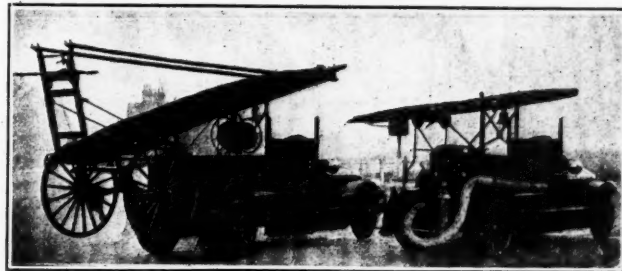
New York, N. Y.—New York City has just received from the St. Louis factory of the Webb Motor Fire Apparatus Company one of the new type 75-foot motor-driven aerial hook and ladder trucks, four-wheel gas and electric drive, the raising mechanism being electrical, although other trucks of the same pattern are equipped with a spring raising device. The design and finish of this truck is of the highest quality. With this shipment also arrived a new Webb piston engine with a rated capacity of 1,200 gallons per minute. At the factory tests this developed over 1,300 gallons capacity. The pump is a four-cylinder vertical, double-acting piston. The power of the 150-horsepower motor is transmitted directly through one set of gears, thus carrying the rotating action of the engine directly into the crank shaft of the pump without the use of beveled gears and sprockets and the consequent loss of power. The operators are being instructed in the use and handling of this apparatus. The result of the official test will be announced later. With the ten Webb high-pressure wagons now in service in the New York department, this gives a total of twelve pieces of Webb apparatus in service, and four pieces still due, to be delivered in the near future.

Atlanta, Ga.—The Board of Firemasters is in favor of complete automobile equipment for the Atlanta fire department, and directed the appointment of a special committee to take up the matter at once and ascertain what can be done, with the city's finances as they now stand, towards purchasing the same. On the committee were named the following: Mayor Courtland S. Winn, Chief W. B. Cummings of the fire department, Alderman I. N. Ragsdale, chairman of the fire board; Alderman Lon Johnson and Councilman J. A. Andrews. Alderman Johnson said the time had come when Atlanta, if she would keep pace with the march of progress in neighboring cities, must devise ways and means of equipping her fire department with automobile apparatus. "The city of Savannah has done away with all the horse-drawn fire apparatus and every company is equipped with an automobile," said he. "As a result the department can cover twice as much ground in half the time, and the cost of feeding and shoeing horses has been eliminated." Alderman Candler, who was instrumental in securing a fire company for the Ninth Ward and equipping it with an automobile, the only one in the department, except the chief's buggy, heartily endorsed the proposition to do away with horse-drawn apparatus entirely. "There's only one drawback," said he, "and that's the condition of our streets. But I am mighty near convinced that the automobiles will go where the horses can't, and if they fail, maybe it will be an added incentive to put our streets in better shape." Alderman Candler also said that the automobile at the Ninth Ward station covers twice as much ground as any other apparatus in the city.

Hartford, Conn.—The city of Hartford, Conn., with a

population of about 100,000, has gone into the matter of motorization in a most systematic way. Next July the working efficiency of the Hartford fire department will be greatly increased by the acquisition of three additional Pope-Hartford combination chemical and hose wagons and two additional Pope-Hartford chief's cars, orders for which have just been placed with the Pope Manufacturing Company. With the two Pope-Hartford auto chemicals and the deputy fire chief's Pope-Hartford runabout now in use the department will have a total of five Pope-Hartford wagons and three Pope-Hartford chief's cars in its service. Hartford belongs in the category of cities which have experienced the benefits of motorization in a limited way, and are now ready to act intelligently in promoting the efficiency and cutting down the expense of their fire departments. Two years' practical experience with Pope-Hartford fire-fighting apparatus has convinced the Hartford fire authorities that the modern standard of efficiency in fighting and preventing fires calls for the exclusive use of motor driven fire apparatus. Hartford's first Pope-Hartford auto chemical and squad wagon, which was put into commission in June, 1910, proved so satisfactory that a second combination chemical and hose wagon was purchased the following year. Now, besides placing another large order, the fire board announces a plan providing for the complete motorization of the department in one year, whereby an annual expense of \$12,000 for maintaining horses and drivers who now do no actual fire-fighting duty can be done away with. The success of Pope-Hartford auto chemicals has created a large demand for the various types of combination hose, chemical and squad wagons manufactured by the Pope Manufacturing Company. The frequency with which an initial purchase of a Pope-Hartford chemical is followed by the installation of additional machines of the same make is evidence of the reliable and efficient service to be obtained from this apparatus. Among other cities and towns which maintain more than one auto chemical of this make may be mentioned: Westfield, Mass., two; Fall River, two; New Haven, three and a chief's wagon; Jersey City, N. J., three; and Brockton, Mass., two. Pope-Hartford fire wagons are also used in Middletown, Conn.; South Manchester, Bristol, Branford, Danbury, Worcester, Mass.; Pittsfield, Mass.; Mansfield, Mass.; Lynn, Mass.; Passaic, N. J.; Port Chester, N. Y.; Wilkesbarre, Pa.; Butler, Pa.; San Bernardino, Cal.; Berkeley, Cal.; Kearney, N. J.; Park Ridge, N. J.; Nutley, N. J.; Siegfried, Pa.; Venice, Cal.; Bayonne, N. J.; Santa Rosa, Cal.; Santa Barbara, Cal.; Terre Haute, Ind.; Medford, Ore.; Kansas City and other places. Among the cities which now have Pope-Hartford fire wagons in process of manufacture at the Pope works are Taunton, Mass.; Northampton, Mass.; Rochester, N. Y.; Hastings-on-the-Hudson, N. Y., and Portsmouth, N. H.

Leicester, England.—The illustration shows two motor fire engines supplied to the Leicester Corporation by Messrs. Mertyweather & Sons. They comprise a Hatfield fire engine, with combined hose tender and ladder carriage, and a "first aid" engine, with fire escape and hose tender. The "Hatfield" pump delivers 350 gallons a minute, and carries a set of light ladders, as well as a quantity of hose and working gear and two hand "Kemik" extinguishers. The "first aid" machine carries a 40-gallon water cylinder. The fire escape on this machine extends to a height of 50 feet, and is provided with a supplementary ladder enabling 60 feet to be reached if necessary. "Hatfield" motor fire engines recently secured a Grand Prix at the Turin International Exhibition.



LEICESTER MOTOR FIRE ENGINES.

## GOVERNMENT AND FINANCE

### Commission Plan for Nutley

Nutley, N. J.—The town of Nutley, which has 765 voters, composed largely of New York business men who commute, has adopted the commission form of government. The vote was 412 to 287, with 66 rejected ballots. The result is considered a victory for the commuters, most of whom favored the plan. The present officials will be replaced by three Commissioners next May. Before then a primary election will be held at which six candidates for a Commissionership will be selected.

### City Auditor's Fiscal Report

Youngstown, O.—The City Auditor has issued a financial statement of the city of Youngstown for the benefit of the bond buyers, which shows a very satisfactory condition. The total bonded indebtedness amounts to \$2,178,047. From this sum there is to be deducted the sinking fund securities and cash amounting to \$157,899.94, leaving a net indebtedness of \$2,020,147.06. The report shows that street improvement bonds to the amount of \$815,127 have been issued, the remaining amount representing the general bonds as at present outstanding. According to the estimated valuation of the city the total aggregates about \$131,300,000, or a bonded indebtedness of \$10.80 per \$1,000 of valuation.

### Bills Signed by the Governor

Trenton, N. J.—Governor Wilson has signed the following two bills: H. 169, authorizing town councils to assess property for street improvements. H. 328, compelling trolley companies to grant free transportation of uniformed police officers and detectives without uniform.

### Report of City Commission Under New Charter

Centralia, Wash.—The report of the Centralia City Commission for February has been issued. The report shows a cash balance on hand Feb. 1 of \$46,619.65. The receipts for the month were \$8,671.13 and the expenditures were \$21,335.01, leaving a balance on Feb. 29 of \$33,955.77. During February, which was the first month that the city was operated under the policies of the new City Commission, there was a saving in the light, police and fire departments of \$388.59 over the preceding month. The salaries of the Mayor and Commissioners amounted to \$266, leaving a net saving to the city of \$121 under the new form of government.

### Serial Bond System Superseding Sinking Fund

Lynn, Mass.—Payments upon city indebtedness this year will amount to \$255,000, as compared with \$384,000 a year ago. The bonds inside and outside the debt limit, with sinking funds which are wiped out this year, amount to \$160,000, and the serial bond disbursements inside and outside, including the water loan act of 1901, upon which the Breed's pond improvements are being made, aggregate \$95,000. In 1911 the bonds, with sinking funds disposed of, totaled \$324,000, and serials \$60,000. Every year hereafter the serial bond payments will increase, because of the provision of the charter, which states that all loans issued by the city shall be made payable in annual installments and that all bonds shall be offered for sale in such a manner that the effect of the premiums, if any, shall be to reduce the total amount of the bonds issued. While serial bond payments will naturally become larger under such an arrangement, the sinking fund requirements will grow correspondingly less, and the time will eventually come when there will be no further need of a Sinking Fund Commission.

### Votes for Commission Rule

Ridgefield Park, N. J.—Ridgefield Park, which for years has had the village form of government, has voted in favor of the commission government. The vote was 366 against 238. The recent alleged scandal in the Board of Village Trustees had a great deal to do with the agitation for a change.

### Election Called to Recall Mayor

McAlester, Okla.—A proclamation has just been issued by the City Council for an election April 24 to recall Mayor Pete Hanraty. A similar election six months ago was stopped by an injunction.

## STREET CLEANING AND REFUSE DISPOSAL

### Collects Thirty Thousand Tin Cans

Vicksburg, Miss.—The clean-up movement was a great success. Sixty thousand tin cans were gathered up by boys of the city and prizes were awarded. Dennis Hossley, Jr., son of Captain Dennis Hossley, of the Warren County Light Artillery, received a fine goat and a wagon as a first prize, having gathered 30,000 cans. The city is in a cleaner condition than it has been for many years.

### Campaign for Cleanliness

Plainview, Tex.—The Civic League has formulated plans for the 1912 campaign for the promotion of cleanliness and beauty of streets, private residences and public properties. The money which the league already has on hand will be expended in beautifying the court house yard. The league urges and requests that all planting of trees be reported to the secretary of the Chamber of Commerce, stating the number planted and of what variety, so that a record can be kept of Plainview's advance in arborage this year.

### Would Solve Problem by Installing Private Incinerators

Atlanta, Ga.—In the miniature crematory which he has installed in his own house, Col. W. L. Peel says he has a system which, if applied generally, would do away with the need of garbage wagons, and would save the city thousands of dollars in money. This appliance is manufactured by a Northern concern, and is used a great deal in hospitals, hotels and large buildings, as well as in residences. It can be put inside the wall of the kitchen, and the cook, instead of putting garbage in the can in the back yard, can deposit it in this appliance, light the gas, and let the smoke carry off the garbage without the aid of wagon or driver. The appliance generates such heat that it is capable of burning anything from bones to scraps of meat. Col. Peel says it would pay the city to install these appliances and save a large annual expenditure it is now out of pocket on the garbage problem.

### Will Have Municipal Clean-up Day

Chester, Pa.—The Civic Section of the Chester New Century Club has persuaded the city authorities to have a municipal housecleaning day, and Saturday, May 11, has been designated.

### April 20 Set Aside for "Clean-up" Day

South Bend, Ind.—April 20 has been set aside as a "clean-up" day by the cleaner city committee of the Chamber of Commerce, and every public-spirited citizen is urged to join with the health authorities in helping South Bend put on a new appearance as spring approaches. Ash piles, rubbish heaps and garbage of all sorts are to be cleaned up and lawns raked and put in good condition for the coming of spring and summer. By an early start in getting rid of disease-breeding waste heaps it is believed much can be done to prevent the spread of contagion when warmer weather comes.

### Muskogee Has Garbage Crematory

Muskogee, Okla.—With the completion of the new destructor and the letting of the contract for the collection of all refuse in the city of Muskogee, a daily tour of all the alleys will be made and all waste paper, cans, left-over food, etc., will be taken to the city plant and burned. Six wagons have been purchased especially for this work. All residents of the city will be informed the hours for collection in the various parts of Muskogee, and the systematic work will begin. Ordinances are to be passed later providing for a penalty for persons who refuse to place rubbish at designated places and who violate health rules regarding the disposal of garbage. The new plant has a capacity of thirty-five tons daily. It will be run for thirty days on trial, the contract being that the furnaces would consume a certain amount of garbage at a specified cost. Tin cans, water-soaked paper and rags, and all rubbish are quickly disposed of when placed in the intensely hot beds of fire.



### Woman's Club Will Pay for Rubbish Collected

Everett, Wash.—The Everett Woman's Club, which is co-operating with the Civic League, the Rose and Dahlia Society, and other organizations in the coming clean-up day, has decided upon a novel plan by which to discharge its obligations in the matter. The plan was arranged by Mrs. Guy S. Alston, who represented the club at the joint meeting held recently. The club is responsible for the success of clean-up day in the territory from Broadway to the river, and to make the clean-up thoroughly effective the members have decided to offer 5 cents a sack for all rubbish collected in this territory. As there is an abundance of cans and refuse of various sorts left over from the winter, the get-rich-quick opportunity for the small boy is very great. The refuse will be carried to two points on March 20, which is the day set aside for city house-cleaning, and will be paid for on delivery. Every boy who collects a bag of refuse and turns it over to either of these ladies will receive a nickel. The money will be drawn from the treasury of the club, but anyone wishing to contribute to the fund may do so.

## RAPID TRANSIT

### New Cars With Low Steps

Washington, D. C.—The fifty new low-step cars which the Washington Railway & Electric Company ordered about two months ago from the Brill Company of Philadelphia, following a general demand from women for cars easy of ingress and egress, will be in use about May 1, according to advices which have been received. The first shipment is expected to arrive in about a month. They will be placed in readiness for service at once. The cars are known as the Narragansett type, being semi-convertible from closed to open; of double trucks and capable of comfortably seating about eighty passengers. The seats run crosswise and the exteriors will be painted yellow. The lines on which the cars will be operated have not been decided upon by the railway company management, but a number of cars will, no doubt, be placed on the Mount Pleasant and Georgetown lines.

### Will Equip Cars With Lifting Jacks

Boston, Mass.—Half of the street railway cars operated in Massachusetts must be equipped with lifting jacks of fifteen tons capacity by July 1, according to an order issued by the Railroad Commissioners. Distribution of these jacks is expected to provide a speedy means of relieving injured persons caught under the wheels of street cars and to hasten the clearing of tracks in breakdowns.

### Install Pay as You Enter Cars

Vincennes, Ind.—The Johnson registering fare box has been placed on the motorman's platform of all the street cars, and the cars will from now on be run on the "Pay as you enter" system. The new system does away with the conductor, and the only official in charge will be the motorman. He will have to make change for the passengers when they have no nickels or checks on hand. Tickets have been abolished, and in their place six brass checks are being sold for a quarter. The passenger will have to drop his nickel or check in the box before he enters the car and will have to give the signal to the motorman to stop the car on leaving.

### New Type of Trolley Car

Newark, N. J.—As an experiment, the Public Service Railway Co. is now running on its Central avenue line a new type of trolley car. In its general appearance the vehicle is much like other modern cars, but it differs from them in the fact that it is equipped with step and wheel guards and has a double exit door. The wheel guards are under the front platform, and with a "tripper" that automatically releases and instantly lowers them to the rails, they take the place of the ordinary fender. The step guard is fastened to the folding door of the vestibule of the car. In position it presents an inclined surface from the outer edge of the first step to the top, so that persons cannot jump on the vehicle and remain there while the car is in motion and before the gates are opened. When the door is opened the step guard folds up against the side of the upper step.

### Traction Line in Merger

Evansville, Ind.—Announcement has been made that the Evansville Public Service Co. and the Evansville & Southern Indiana Traction Co. would form a merger. The traction company, which is owned by practically the same men as the Northern Indiana Railway, having headquarters in South Bend, operates a line from Evansville to Patoka, Ind., and also owns and controls the city lines. The merger will become effective at once. The Evansville Public Service Co. serves light and heat. The merger was brought about by the increased demand for more power on the part of the traction company.

## MISCELLANEOUS

### Town Is Ordered to Move.

Winnipeg, Man.—A special government commission has ordered the whole town of Frank, Alberta, moved, as a protection against rock and snow slides. There are 3,000 inhabitants. Nine years ago in a slide 84 lives were lost. For several days rock and snow has been tumbling down the side of Turtle mountain, at the bottom of which lies Frank. Sides of the mountain show signs of giving way again.

### Oneida's Playground Day

Oneida, N. Y.—Wednesday, May 1, will be "Playground Day," and on that day it is planned to visit every store, office, factory and residence in town. The object will be to raise \$1,000 for the benefit of the playgrounds. Commissioners Helen Beal and Anna Dunn were named as a special committee to secure a list of those who are willing to devote a part of the day to the work in hand. At the last meeting of the Playground Commission President Rex was directed to purchase sufficient equipment for two tennis courts and one baseball diamond, which will be created on Maxwell field as soon as it is possible to work the ground. Secretary Evans was directed to prepare a list of playground apparatus which will be needed for Allen Park, Vanderbilt Avenue Park, the old Elm street school house playground and other grounds that may be found to be available during the spring.

### Saginaw Has Curfew Law

Saginaw, Mich.—Curfew is now rung in Saginaw every night at 9 o'clock. Every person under the age of 16 who is on the streets at that time, unless accompanied by a parent or guardian, is ordered home immediately by the police. In this connection it is recalled that Saginaw five years ago had the name of being the most wide-open town in Michigan. There will be no more loitering around street corners or in hallways of the young element of the community. The police are instructed to enforce the ordinance and any young person coming within the age limit apprehended will be classed as a juvenile disorderly, and according to the State law be subject to punishment as an incorrigible. Curfew will be sounded exactly at 9 o'clock every night by the fire bells of the city and the whistles of the water works station. It is said in this connection that when the west side water works whistle is turned loose no other signal will be necessary in any part of the city, as it has a booming sound that carries a long distance.

### Board of Public Safety Studies Traffic Problem

Louisville, Ky.—The Board of Public Safety is studying the traffic problem as it applies to standing vehicles on the city's busiest thoroughfares. Many other cities are endeavoring to solve the same problem, as requests for copies of Louisville's traffic ordinance are numerous. The traffic law now in force is silent upon the subject of allowing vehicles to stand in the street along the curbing. According to Pendleton Beckley, a member of the Board of Public Safety, Kansas City is considering building a municipal garage in a central location, where a small fee will be charged for housing automobiles while the owner is attending to his business, or the woman who has used a machine to come downtown is shopping. Boston allows a stop alongside the curbing not exceeding ten minutes. Some cities are planning to set aside certain portions of little-used side streets as the only places where vehicles are allowed to stand. All of these plans are being given thought and study by the Board of Public Safety.

### Michigan Village for Sale

Negaunee, Mich.—Bay Mills, Chippewa county, a few years ago one of the most flourishing and enterprising villages in Michigan, is for sale. The Cleveland Cliffs Iron Company, which owns most of the property at Bay Mills, has made the offer. The town is abandoned. The mills and factories are silent, no steamers land at the docks and the residences and store buildings are no longer occupied. The railroad station was destroyed by fire last summer. No reason is ascribed for the state of affairs at Bay Mills, which once held the balance of power in Chippewa county politics.

### City to Have Central Automobile Garage

Los Angeles, Cal.—The council has instructed the budget committee to provide for a central garage when it makes the allowance for a machine shop in the next budget. The idea was proposed by Topham and the plan is for all the city's autos to be kept in this one central garage. The various departments of the city will also be notified again that there is a city ordinance requiring all city automobiles to be painted a bright yellow with blue wheels. This ordinance has been effective for more than a year, but only one automobile has been painted that color. The color scheme was adopted so those in charge of the machines will not be apt to use them for personal "joy rides" Sundays and holidays.

### Will Beautify the City

Elwood, Ind.—Under the auspices of the Merchants and Manufacturers' Club a campaign for "a city beautiful" will be started with the opening of real spring. A committee will be immediately appointed and definite work towards a practical campaign toward beautifying the city will be started, the work to be the most systematic ever attempted here.

### City Establishes New Laboratory

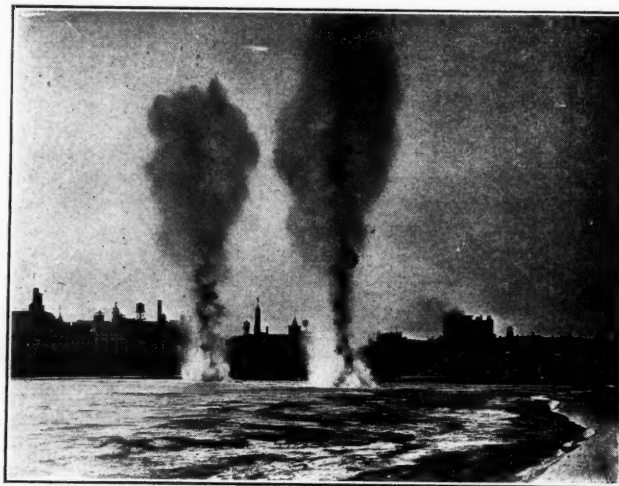
Louisville, Ky.—In a modern laboratory just established on the third floor of the City Hall Annex, the Board of Public Works expects to save the city thousands of dollars annually by a chemical analysis and test of all asphalt, cement, road oils, paints, bricks, creosote blocks and granite used on the streets, alleys and sidewalks and on city buildings. The new laboratory is in charge of City Engineer David R. Lyman. It is fitted out with apparatus for testing the ductility of asphalt, the wearing qualities of brick, granite and wooden blocks and the materials contained in the paint, cement and road oils used by the city. Before purchases are made in the future and contracts are let, the Board of Public Works proposes to put all materials to a thorough test in its new laboratory. The new laboratory also is fitted with electric ovens and a hood will be constructed to carry off the offensive gases and keep them from passing into other parts of the building. The laboratory is light and airy and is amply large for the purposes for which it was designed.

### Would Establish Local Bureau of Municipal Research

Atlanta, Ga.—Arrangements for the New York Bureau of Municipal Research to spend several months in investigation and research work in Atlanta, preliminary to the establishment of a local bureau, independent of the New York organization, will be made at a meeting within the near future of the municipal bureau committee of the Chamber of Commerce. Unless an unforeseen obstacle interferes the New York bureau will send experts here for several months of investigation and actual research work, and afterward will follow the organization of a local bureau. The work of the New York department will determine what fields for municipal research and improvement are offered here, and on what plan an Atlanta bureau could be most effectually organized. The first necessity will be funds with which to pay expenses of the New York experts. Afterward advocates of the bureau are confident that a local department for municipal research will prove practicable and desirable. At a conference lately between Dr. William H. Allen and members of the chamber of commerce, he gave the assurance that the New York bureau was ready to assist in establishing a local bureau by preliminary investigation and research work. In addition to being independent of the New York bureau, the Atlanta department would be separate from the city government. Its purpose would be to make the city government more effective.

### Women Have All the City Jobs

Froissy, France.—In this little city, sixty miles north of Paris, there is not a municipal job worth having that a woman doesn't occupy, from Mayor down to "Mother" Lafarge, who tends the gate at the main street railway crossing. The conductor on the local train is a woman, Mlle. Duroc. The letter carrier is a woman, Mme. Dauboin. The town crier is an old lady named Mme. Deuhon, and the chief of police is a woman. The men are engaged in farming and fruit-raising and leave municipal offices to spinsters and old women.



Courtesy Rochester Times.

BREAKING UP ICE JAM ON GENESSEE RIVER ABOVE ROCHESTER BRIDGE BY USE OF DYNAMITE.

### Municipal Shelter Plan by Charity Board

Spokane, Wash.—Secretary H. L. Hughes, of the city charity board, states that a committee of three from the board would at once commence an investigation of local social and industrial conditions, with the object of recommending to the city commissioners the construction and maintenance by the city of a municipal institution, under one roof, to include a municipal lodging house, day nursery, free baths, dental clinic and medical dispensary. "It is my idea," said Mr. Hughes, "that the municipal institution proposed also take over the management of the present free employment agency and emergency hospital, placing them under the same roof with the rest of the charities which I believe should be maintained by the city. Besides the functions above outlined the proposed institution would perform the work now handled by the Christian Home, namely, taking care of the unemployed, furnishing work and meals."

### LaPorte Will Have Fine Park

LaPorte, Ind.—This city will soon possess a very complete park, by reason of a bequest of Herman Fox, wealthy cloth manufacturer. The tract has been planned and will be built by the American Park Builders, of Chicago, and will be complete in every detail, including comfort stations, well distributed drinking fountains, elaborate lighting system and bathing beach casino. The park comprises about thirteen acres, occupying for the most part a high, undulating territory covered with a magnificent native growth of oak. The land slopes to the shore of Clear Lake, from which a comprehensive view of LaPorte may be had. Two islands will be built by dredging and a large water court formed with flanking piers, the courts being graded and sanded for bathing purposes. The bath house and casino will be in the form of a pergola, part of which will bear a concealed roof. The main parkway and walks will approach through a dignified entrance of granite and iron, banked with heavy plantings. Provision has been made for a wonderfully formed natural amphitheater, the slopes of which are covered with great oak trees, for the simple but well designed band stand, while provision for athletic sports, including baseball and tennis, will be made on the grassed surface of the large meadow. The park is one of a series of similar public improvements contemplated in LaPorte.



**Mayor Recommends Bureau of Research**

Chattanooga, Tenn.—Chattanooga is soon to have a bureau of municipal research, if plans of Mayor Thompson do not miscarry. The city's chief executive had been investigating the work of such bureaus in other cities and he is convinced that much good could be accomplished by the establishing of one here. In a communication to members of the commission, received at the meeting, he recommended that such a bureau be established. It was suggested that it be composed of five members, to be appointed by the commission and to serve without compensation. Mr. Thompson was confident that capable men could be found who were willing to serve the city in this capacity without salary. His recommendation was received by members of the commission and approved. It will be taken up at a conference where suitable ordinances will be framed.

**Manner of Selecting City Officials Is Decided**

Oconomowoc, Wis.—A special election held in Oconomowoc to decide the manner of selecting city officials brought out a strong vote, the questions involved in the election having aroused much interest. The principal question in the election was whether the following city officers, clerk, physician, attorney, street commissioner and board of public works shall be appointed by the council, and this was lost by a majority of 216. Seventy-nine votes were cast in the two precincts for and 295 against. The other issue was whether the assessor and constable should be elected by the people, and this was carried by a vote of 312 to 63.

**Old Dam Is Being Reinforced.**

Oradell, N. J.—The Hackensack Water Company has been busy reinforcing the old dam on the Hackensack River, just north of town, and reconcreting behind the spillway, in preparation for high water, at which time the new dredge almost completed, near the site of the new dam, will be launched. The dredge above the dam, which has just been completed, is at work on a channel running north and paralleling the right of way of the Erie Railroad and then on an angle to connect with the old river bed. The suction dredge on the lake, which has been lying idle all winter, is being connected with a quarter of a mile of pipe, through which all the mud and dirt will be conveyed toward Oradell avenue to fill in the low places and level off the land.

**Isles of Safety**

Jersey City, N. J.—Rush hour isles of safety were used for the first time in Exchange place last week. The police and trolley authorities working together managed the experiment most acceptably, receiving enthusiastic commendation from the thousands of trolley and tube passengers. Ropes and iron posts are placed short distances apart running parallel with the trolley tracks. They are placed six feet away from the rails so that passengers may stand inside and out of danger of being run over by passing trucks. The idea is also to keep the trucks to the extreme right of the street and not let them cut across waiting stations, as is often done.

**Municipal Farm Is Proposed Near Spokane**

Spokane, Wash.—Three hundred and twenty acres of agricultural land near Spokane will be set aside as a municipal farm, where violators of the city code can earn money while working out jail sentences, if an ordinance carrying an appropriation to be introduced by Z. E. Hayden, commissioner of public safety, is adopted by the city council. Mayor William J. Hindley favors the project and it is expected that at least two of the other three commissioners will give it support. Commissioner Hayden thinks the farm can be placed upon a self-sustaining basis at the beginning. George W. Stocker, police judge, said in indorsing the plan: "I could go through the city jail now and pick out many men I have sentenced for vagrancy and drunkenness who could be placed on the farm upon their honor. There they could rid themselves of the alcohol and the drugs which are destroying their bodies and minds and at the same time earn money for themselves and dependants. I am also in favor of the authorities of Spokane county securing a tract near the proposed city farm to operate a similar institution for reclaiming unfortunates."

**City May Have Municipal Abattoir**

Pittsburgh, Pa.—In an effort to protect the public health, as well as to supervise the activities of the smaller slaughter houses of the city, a municipal abattoir is a near future possibility. Councilman W. A. Hoever and Superintendent J. C. McNeil, of the Bureau of Food Inspection, agree that such an institution is necessary. This would center the industry, as well as to allow proper inspection of all meats handled. The move has the endorsement of the Industrial Development Commission. Dr. McNeil's report shows that in the seventy slaughter houses of the district there are handled every week 440 cattle, 2,430 sheep, 2,592 hogs and 1,949 calves, all going into the market without a thorough inspection, being given but the limited looking over possible by the bureau. He also states that the presence of the slaughtering places has proved objectionable to residents of the communities in which they are located. According to the report, the whole question amounts to this: The city will slaughter, dress, cool and refrigerate all animals killed, as well as store the products, without cost to the butcher. To cover the expense the city will retain all the offal, usually a complete waste to the smaller butcher, anyhow, which will be put into marketable form and disposed of. Every part of the animal the butcher wants will be given to him. It is also stated that the introduction of this slaughter house would put into effect here one of the best systems used anywhere in the country for meat inspection.

**Public Baths are Planned in Savannah**

Savannah, Ga.—Plans are now on foot for the establishment of public baths in Savannah. If the proposition is carried out as planned, it is expected that they will be completed in time for use during the summer. At a meeting of the Committee on Public Health of the Chamber of Commerce, Mr. W. D. Beymer, controller of the Central of Georgia Railway, and a member of the committee, advanced the proposition. It is proposed to petition City Council to make an appropriation of \$5,000 for the establishment of the baths. In the event that those established with this appropriation prove a success, it is proposed to turn them over to the use of the colored people of the city and obtain a new and large appropriation for the construction of other baths upon a more elaborate scale for the white people.

**May Sell Bread by Weight in London**

London, England.—The Public Control Committee of the County Council has made a recommendation to the effect that in the county of London, bread, other than fancy bread, shall generally be sold only by weight, and be weighed in the presence of the purchaser. This stipulation would not apply in the case of bread cut from a loaf or of bread supplied to certain institutions where the weight is ascertained on delivery, nor where bread is delivered outside a shop would the bread have to be weighed, except at the request of the purchaser or his servant or that of an inspector of weights and measures. That a distinct case exists for the introduction of legislation on the subject will be understood when it is stated that the inspectors of the London County Council found, as a result of systematic purchases during the past year, that the total percentage of light loaves was as much as 53, the average percentage of shortage in such loaves being 5 per cent. The committee, therefore, urges the Council to request the Board of Trade to consider the desirability of introducing legislation for the amendment of the law on this subject.

**Denver's System of Street Numbering**

Denver, Col.—The decimal system of numbering is in vogue. One hundred numbers are assigned to each square, giving one number to each 12½ feet, or two numbers to each lot of 25 feet, beginning at the Platte river on the west at 0, and 100 at First street, increasing northeasterly on Larimer and all streets running parallel. In the old part of the city the numbered streets run northwest and southeast, and the streets that cross them northeast and southwest. This, no doubt, was done because Cherry creek winds in a peculiar way through the center of the city, and the first settlement was on the banks of that little stream. As a general rule, all numbered streets are crossed by named streets, and all numbered avenues are crossed by named streets.

## LEGAL NEWS

### A Summary and Notes of Recent Decisions—Rulings of Interest to Municipalities

#### Consulting Engineer—Civil Service

**Burrell vs. City of Portland et al.**—The charter of the city of Portland, providing by section 306 that all appointments to and promotions in the subordinate administrative service of the city should be made by a competitive examination, and expressly exempting therefrom the city engineer, was not intended to apply to an outside special consulting engineer employed by the city for the drawing of plans and specifications for the construction of a bridge authorized by section 118½ of its charter.—Supreme Court of Oregon, 121, P. R., 1.

#### Injury to City Employee

**Roberts vs. City of St. Marys.**—Municipalities as employers in maintaining a well, windmill and pump to furnish water to the public are under the same obligation as other employers to furnish their employees a safe place to work, and, under like conditions, are likewise responsible in damages to an employee who is injured by the negligent failure to perform this duty.—Supreme Court of Kansas, 121 P. R., 367.

#### Defect in Street—Ice

**Loretz vs. City of New York.**—A city contractor, under a permit issued by the city, and with the supervision of the city's water department, used an engine connecting with a city hydrant, and discharged a large quantity of water upon the surface of the street, which froze and accumulated by thin layers until the street was filled with ice, which was slippery and uneven. Held, that the ice constituted a defect in the street. Evidence, in an action for injuries to a horse from a defect in a street, held to show that the city had constructive notice of the defect.—New York Supreme Court, 132 N. Y. S., 988.

#### Fire Department—Pensions

**Egbert F. Ashley Co. vs. Fire Department of the City of Rochester et al.**—The members of former volunteer companies, as well as those of the paid department that succeeded them, are within the scope of the relief intended to be granted by Laws of 1864, incorporating the fire department of the city of Rochester to accumulate a fund for the relief of indigent members of the department, and the rights of the department are not modified or abridged by Insurance Law, imposing a tax on local premiums of foreign insurance companies, nor by the amendments of the charter of the city of Rochester by Laws of 1879, giving the corporation all the rights and benefits conferred by law upon the fire departments of other cities in the State, and the department is entitled to receive the money derived from the tax referred to.—New York Supreme Court, 133 N. Y. S., 591.

#### Streets—Obstructions—Park Strips

**Village of Barnesville v. Ward.**—A city may not maintain, or permit to be maintained, a fence, wire or other barrier around such park strips dangerous to the life or safety of any traveler who undertakes to pass over the same, and if a pedestrian in the exercise of due care for his own safety is injured by reason of the dangerous condition of such barrier, the municipality is liable in damages for such injury, if it knew, or in the exercise of ordinary care ought to have known, the dangerous condition thereof.—Supreme Court of Ohio, 96 N. E. R., 937.

#### Excavating Street—Injury to Abutting Property Owner

**Ford v. Phillip.**—In an action against a contractor for injuries to property by excavating in the street so as to cut off access, invalid proceedings of the city council under which the grading was done would afford no justification for defendant's acts, and were not admissible for such purpose. Under Rev. St. 1909, providing that a grade of a street once fixed cannot be altered without a reassessment of damages to abutting property owners, the action of a contractor in cutting a grade several feet lower than that established is illegal, and renders him liable in tort to an abutting owner whose access to the street is cut off.—Kansas City Court of Appeals, Missouri, 141 S. W. R., 907.

#### Assessments—Statutory Limitations

**Bateman v. Board of Commissioners of Improvement District No. 1 of City of Clarendon.**—Under Kirby's Dig., providing that no single improvement exceeding in cost 20 per cent. of the assessed value of the real property in the district shall be undertaken, interest to accrue on bonds issued for the cost of an improvement must be included as a part of the cost.—Supreme Court of Arkansas, 143 S. W. R., 1,062.

#### Sub-Contracts—Abandonment—Estimates

**Willson & Adams Co. v. Mack Paving & Construction Co. et al.**—Under a contract for a sewer improvement, providing for monthly payments of 85 per cent. of the estimated value of the work performed, etc., and under a sub-contract, providing for payments of proportionate amounts to the sub-contractor, based on the main contract, he cannot, after having received such proportionate payments and abandoned the contract, recover on the theory that the general contractor was not paid as much as he should have been.—New York Supreme Court, 132 N. Y. S., 297.

#### Councilman—Forfeiture of Office

**Commonwealth ex rel. Sherwood, District Attorney v. Bennett.**—Act May 23, 1889, provides that no officer of any city shall serve as a member of the Council during his term of office. Held, that the local Registrar of Vital Statistics, appointed under act May 1, 1905, forfeited his place as Councilman, where he continued to hold the office of Registrar.—Supreme Court of Pennsylvania, 82 A. R., 249.

#### Sewer Assessment—Railroad Property

**Georgia R. & Banking Co. v. Town of Decatur; Town of Decatur v. Georgia R. & Banking Co.**—In the absence of express legislative authority, the main track of a railroad company is not subject to levy and sale to satisfy a lien for assessment for local improvements. It follows that an execution for assessments issued against a lot of land bisected by the main track of a railroad is not liable in solido for improvements on two streets which bound the lot of land and between which the main track is located, and therefore a portion of the land on one side of the railroad track cannot be levied on to satisfy assessments made against the entire strip of land through which the railway runs, on account of sewers constructed in streets lying on each side of the track.—Supreme Court of Georgia, 73 S. E. R., 831.

#### Violation of Ordinance—Review

**Moon v. City of Jefferson.**—The filing of a bond conditioned for the personal appearance of the defendant to abide the final order, judgment or sentence of the Municipal Court or of the Superior Court (or the filing of a proper affidavit in forma pauperis in lieu of a bond) is a condition precedent to obtaining a writ of certiorari in a case where one seeks to review the judgment of a Municipal Court. The bond must be approved by the clerk of the municipality under which the court exists, if there be one, and it must be conditioned for the appearance of the defendant to abide the final judgment of the Superior Court, as well as of the Mayor's Court, and a defect in either respect is fatal. Consequently it is not error for a judge of the Superior Court to refuse to sanction a petition for certiorari when it appears from an inspection of the bond tendered and attached to the petition that it is neither conditioned as required by law nor approved by the municipal officer charged by law with the duty of approving it.—Court of Appeals of Georgia, 73 S. E. R., 854.

#### Elevation of Tracks—Lighting Streets

**City of Chicago v. Pennsylvania Co.**—Where a railroad company, pursuant to an ordinance of a city, elevated its tracks over city streets, so that its trains would not interfere with travel on the streets, the city could not under its police power compel the company to maintain lights in the streets, though the streets were darkened by the elevated tracks, because such lights were unnecessary for the protection of the traveling public on account of the operation of the trains. The police power of a city is limited to the enactment of laws demanded for the public health, comfort, safety or welfare of the people of the city.—Supreme Court of Illinois, 96 N. E. R., 833.



**Constitutional Law—Initiative and Referendum**

Frank Kiernan, Plff. in Err., v. City of Portland, Joseph Simon, Mayor, et al.—Whether or not a State has ceased to be republican in form within the meaning of the guaranty in U. S. Const., Art. 4, Sec. 4, because of its adoption of the initiative and referendum, is not a judicial question, but a political one, which is solely for Congress to determine. Questions as to the validity under the State Constitution of Or. Laws 1907, Chap. 226, authorizing the voters of a municipality to resort to the initiative to amend its charter, and as to the regularity of the proceedings leading up to the adoption of an amendment, and of the proceedings culminating in the adoption of a particular ordinance, are not Federal, and hence will not support a writ of error from the Federal Supreme Court to a State court.—United States Supreme Court, S. C. R., 231.

**Highway Injuries—Notice**

Cassidy et al. v. Town of Southbury.—The notice of injuries from a defective highway recited that plaintiff's horse was injured about the legs and body and lamed and permanently injured, making him worth \$200 less than before the fall; that plaintiff has expended a certain sum for medical attendance; that the wagon was injured, making it worth \$50 less than it was before the fall and requiring an expenditure of \$35 in repairing it; and that plaintiff has lost the use of the wagon and horse for two months, which loss was worth a certain sum. Held, that the notice reasonably complied with the statute.—Supreme Court of Errors of Connecticut, 82 A. R., 198.

**Billboards—Reasonable Regulations**

State and City of Ashville v. Staples.—Courts will not interfere with the exercise of the discretionary powers conferred on a municipal corporation for the public welfare, unless the exercise thereof is so clearly unreasonable as to amount to a manifest abuse of discretion. Where the charter of a city authorized it to pass an ordinance regulating billboards generally, an ordinance prohibiting the erection or maintenance of any billboard within the city nearer the ground than 24 inches, except when erected against a solid wall, was a reasonable exercise of the city's police power for the public welfare. Where a billboard maintained on private property is secure and is not per se an infringement on public safety, it is not a nuisance and cannot be made so by legislative fiat and then prohibited, nor can its maintenance be regulated by mere aesthetic conditions under an alleged exercise of the city's police power.—Supreme Court of North Carolina, 73 S. E. R., 112.

**Intoxicating Liquors—License Tax**

City of Shreveport v. Smith.—In interpreting the words of the Constitution the presumption is in favor of their natural and popular meaning at the time that they were used, unless the subject or text suggest that they were used in a technical sense, and the reason and spirit which superinduced their use should be considered. The term "malt liquors," as used in the provision of article 229 of the Constitution, which reads, "This restriction shall not apply to dealers in distilled, alcoholic or malt liquors," and whereby political corporations throughout the State are left free to impose license taxes upon the dealers thus mentioned, without regard to the action or non-action of the State in such cases, must be regarded as applying to malt liquors which are, or may be, used as beverages, and which are intoxicating, and as having no application to malt liquors which are not, or may not be, so used, and are not intoxicating.—Supreme Court of Louisiana, 57 S. R., 652.

**Eminent Domain—Property Already Taken**

City of Moline v. Greene et al.—Local Improvement Act provides that all persons having or claiming interest in any premises to be condemned shall be designated as "all whom it may concern," and be made defendants by that description, and further requires notice to all defendants with an opportunity of hearing. The legal title to public library property, sought to be condemned by a city in order to widen a street, was in the library board, but was held in trust for the inhabitants of the city, who are entitled to the perpetual free use of the library. Held, that citizens and taxpayers of the city could object to the taking of the library property for the widening of a street.—Supreme Court of Illinois, 90 N. E. R., 911.

**Improvements—Property Liable**

Clark v. City of Salem.—Salem City Charter provides that each lot within the limits of a proposed street improvement shall be liable for the cost of the improvement upon the half of the street in front of and abutting it, and that, where land is not laid off in blocks, the cost of the improvement shall be assessed to the owner or owners of land lying within 100 feet of the improvement. A section provides that improvements shall be made at the expense of owners of adjacent property. Held, that property in the city is liable to be subjected to an assessment for the improvement of a street, though it does not abut thereon, if it is adjacent. Though at the time of the initiation of proceedings for the improvement of a street a half of the land sought to be used therefor was the property of a public service company, an abutting owner cannot complain that the city was without jurisdiction to make the improvement, and that the assessment was void, where the corporation owning the land subsequently made a dedication in writing to the city.—Supreme Court of Oregon, 121 P. R., 416.

**Streets—Adverse Possession**

City of Seattle v. Hinckley et al.—A strip used as a public street became such by adverse possession of the city, where, for 20 years, it was generally used as such by the public openly, notoriously and continuously, during which time its boundaries were clearly defined by fences, and it was known as a certain named street. The payment of taxes by private persons on land used as a street will not estop the city from claiming the strip as a public street, nor would its inclusion in a local assessment district and the bringing of a suit to foreclose the assessment so estop it, the action of the assessing officers not binding the city. That the city's legal officers, though claiming that a certain strip was a street, out of caution included it within the strip to be condemned from defendants for widening streets, would not estop the city from claiming that it was already a part of the street in proceedings against defendants to quiet its title in the strip, where defendants were not injured by its inclusion in the land to be condemned; and especially in view of Rem. & Bal. Code, prescribing the manner in which streets may be vacated.—Supreme Court of Washington, 121 P. R., 444.

**Tidelands—Grant to City**

Cimpher et al. v. City of Oakland.—Tidelands on any navigable estuary, over which the tides regularly ebb and flow, are charged with a public trust for purposes of navigation and fishery, and so cannot be acquired by prescription by a private person. A mere resolution of a city council, not signed by its mayor or shown to have been passed over his veto, purporting to grant property of the city, is ineffectual, not being in accordance with the method provided by its charter for disposing of its property. Const. Art. 15, providing that certain tidelands shall be withheld from grant or sale to "private persons, partnerships or corporations," does not prohibit its grant to a municipal corporation, "private" qualifying each of the three words following it; though, when granted to a city, the prohibition protects it from grant or sale by the city to privates, except as it may be properly disposed of in furtherance of the trust on which it is held—that is, to subserve the public uses of navigation and fishery.—Supreme Court of California, 121 P. R., 374.

**Local Improvements—Estimates**

City of Marion v. Sisney et al.—The estimate of the cost of a local improvement, required by Local Improvement Act, providing that an estimate of the cost of the improvement as originally contemplated, or as modified at a public hearing, shall be filed, together with the ordinance for the improvement and recommendation, must be substantially the same as that required by section requiring the Board of Local Improvements to cause the public engineer to make an itemized estimate of the cost, unless at the public hearing a change is made in the estimate, in which case the estimate as finally adopted at the hearing must substantially conform to the estimate attached to the petition for the confirmation of an assessment for the improvement.—Supreme Court of Illinois, 96 N. E. R., 860.

## NEWS OF THE SOCIETIES

### Southern Appalachian Good Roads Association

Seventy delegates from the States through which the Blue Ridge Mountains extend gathered at Spartanburg, S. C., March 28, for the spring convention of the Southern Appalachian Good Roads Association. Of the addresses made none attracted greater attention than that of Dr. Joseph Hyde Pratt, president of the association and State geologist of North Carolina, on the proposed automobile highway on the crest of the Blue Ridge from Marion, Va., to Tallulah Falls, Ga. For a continuous stretch of 112 miles this road will be from 3,000 to 3,500 feet above sea level. It will cross Mount Mitchell. Dr. Pratt said that the project would be financed entirely by private capital, and if it could be built in no other way tolls would be charged for the use of the highway. Forty miles of the road have already been constructed.

Other addresses were made by Major John F. Carson, of the United States Bureau of Manufactures, and E. J. Watson, Commissioner of Agriculture of South Carolina.

The association adopted a resolution authorizing a committee to solicit subscriptions towards building a road over the mountains from Tryon to Hendersonville, N. C. This is the final link in the highway from Columbia to Asheville via Spartanburg.

After hearing an address by D. H. Winslow, of the United States Office of Public Roads, on the second day of the convention, the association adopted resolutions urging more liberal appropriations to the Federal office of public roads so that engineering assistance may be more generally given to the States in highway undertakings.

The association indorsed the measure introduced in Congress looking to Federal aid for the construction and maintenance of a system of national public highways under the "post roads" clause of the Constitution. It was decided to request the various State Legislatures to pass laws requiring all able-bodied convicts to be employed in constructing and repairing the public roads.

Resolutions were adopted emphasizing the necessity for the enactment of speed laws and their strict enforcement.

Dr. Joseph Hyde Pratt, president of the association, said the convention has been successful in accomplishing what it had set out to do and that the construction of the three roads which were the subject of discussion was assured. The next meeting of the association is to be held in Atlanta in the fall.

### The Lake Michigan Sanitary Association

The Lake Michigan Sanitary Association will hold its fifth annual meeting on April 4, 1912, at the University Club, Hammond, Ind. Some of the papers and their authors are as follows: "A Solution of the Calumet Region Problem," by Professor R. L. Sackett, Purdue University; "The Sag Canal," by Robert R. McCormick, chairman River and Lakes Commission, Illinois; "North Shore Problem," by James O. Heyworth, constructing engineer, Chicago; "Sanitary Legislation for the Calumet Region," by the Hon. Frank N. Gavitt.

### American Association for Highway Improvement

With thirty-one of the leading good roads associations already affiliated with it, the American Association for Highway Improvement, which was formed in 1910 for the purpose of correlating the road movement, is now beginning a campaign to establish associations in every district in the United States that does not boast of one at the present time.

In 1911 the American Association included 140 local associations, the work embracing the States of Tennessee, South Carolina, Virginia, West Virginia, Georgia, Florida and Maine. In the first year of its existence the association gained 1,000 regular members and sixty sustaining members. The number of regular members is to be increased to 5,000 this year.

One of the most gratifying features of the report just issued by the association is the announcement that twenty-one of the leading railroads of the country, in order to aid in the work of stimulating the efforts to bring about a better system of public roads in this country, have decided to contribute annually toward the educational work.

The association announces that it will continue to strive for wise, equitable, and uniform legislation in every State; that it will continue to do all in its power to bring about skilled supervision of roads and the elimination of politics from their management and will work toward correlation of the roads, so that those of one State shall connect with those of another State.

The association is also urging the utilization of convict labor in such a manner as to involve the least competition with free labor and to bring about the greatest benefit to society and the most thorough moral and physical development of the convict.

Thomas Nelson Page, the author, is in charge of the membership committee and is recruiting several hundred new members each month. Lee McClung, Treasurer of the United States, is treasurer of the association; W. W. Finley, president of the Southern Railway, is chairman of the executive committee and is giving his personal attention to the work. Logan Waller Page, director of the United States Office of Public Roads, is president of the association.

### Federation of Civic Clubs of Detroit

Realizing that the extraordinary growth of civic associations has been more rapid and widespread than the initiators of the movement expected, the Federation of Civic Clubs of Detroit has planned a complete reorganization and this spring will enter on the most pretentious program ever attempted by an organization of the kind in this city.

Organizations now represented in the federation are: Northwestern Business Men's, Northeastern Business Men's, Grand River Avenue Improvement, Central Grand River Improvement, East End Civic, Milwaukee Junction Manufacturers' Association, Northwestern Research Club, North Woodward Residents' and West Warren Residents' associations, Greater East Detroit Business Men's Club, Kercheval Avenue Civic Improvement Association,

West End Civic and Mack Roaders' Improvement associations. The newly organized Baker Street and Gratiot Avenue Business Men's associations are also expected to join.

Albert J. Hetchler, chairman of the program committee of the federation, has prepared with his committee an extensive program for the year. It is expected that after the reorganization meetings will be held every two weeks. At these the subjects will be discussed in order by members and by outside authorities who have been invited in.

Some of the divisions of the program are as follows:

**Government Needs**—The short ballot; the true function of the common council.

**The Mayor**—The question of an efficient and responsible man; the tendency to put more power into his hands.

**Sanitary Needs of Detroit**—Milk supply; water supply; handling of garbage; sanitary care of schools and homes; dental clinics; physical examinations to detect and prevent the spread of disease.

**Street Car Question**—Regulation with or without a franchise; municipal ownership; subway; motor buses.

**Beautification of Detroit**—Belle Isle and other parks; city plan; protection of trees and shrubs; billboards; architecture of public and private buildings.

**Education**—Efficiency of present system; literary, musical and civic societies; technical education, night schools.

**Needs of the Workingmen**—High cost of living; labor unions; socialism; contrast between competition and co-operation; present means for amusement and culture; moral needs.

**Saloons**—From economic standpoint; in politics; regulation (to be discussed by saloon man); substitutes (by temperance man); municipal ownership of saloons; no saloons.

**Protection**—Efficient city buyers department; police; safe and proper pavements; safe and clean sidewalks.

**Dependents**—Schools; hospitals; charities; proper attitude toward unfortunates; giving or assisting.

### Norfolk Advertisers' Club

The "Importance of the Ad Club to the City" was the subject of an address by J. R. Moffett at a meeting in Norfolk, March 29. He said the organization soon gets to be the first in the cities where they are established. Nearly every town has its Chamber of Commerce or Board of Trade, some good and some not so good, he said. But wherever ad clubs have been organized they have become a power for good and soon get to be the first organization of the city.

He spoke of the Boston convention last year as the greatest convention of any kind ever held in this country, and said the Dallas convention this year was going to be greater. "Wherever you find ad clubs you find them doing the work. They build men and men build cities." He said other organizations come to the ad clubs and ask how to put it across whenever they have any big undertaking on their hands.

Horace F. Smith, of the Richmond Times-Dispatch, told a glowing story of what the Advertisers' Club has accomplished for Virginia's capital city. He said the club was eight months old and had 169 members.



"The greatest asset is a community spirit," said Mr. Smith. "It is worth more than money, enthusiasm or little bands of live wires scattered here and there. The dynamic force that builds cities is the city spirit."

Mr. Smith said the Advertisers' Club is doing more for Richmond than any of its other organizations. It organized the "civic co-operative association," composed of three members from each of seven commercial organizations. It brings all of the organizations together to work for Richmond.

He said the first of January the association wanted to celebrate. It called upon all the business men to march down Broad street behind a brass band and carry banners and burn red fire. You would not have believed it possible, he said, but two thousand of the leading business men of Richmond marched in line and with others filled the auditorium, hundreds being unable to get in, and such a booster meeting you never heard of. The community spirit was contracted and the result will be felt for a long time.

Mr. Smith said there was not an organization in Baltimore, New York or anywhere else that can compete with the Advertisers' Club.

Mr. Smith's enthusiastic speech aroused Mr. Shay, of Baltimore, who sprang to his feet and proclaimed that the ad club of the Monumental City proposed to build a trades building in which it would take in all the commercial organizations. Mr. Smith was quick to retort that Richmond had already awarded the contract for its manufacturers' building, to be ten stories high, in which all the commercial organizations would have headquarters.

Mr. Shay said before the ad club was born Baltimore was a good old political city. He said they had politicians there so crooked they did not bury them when they died but just screwed them in the ground. Now it is a wideawake, progressive city, and the ad club has made it so.

#### New Jersey Fire Chiefs' Association

The association met at the rooms of the Pica Club, Paterson, N. J., March 29. The business meeting was brief, interest centering on the inspection of Paterson's new fire hall and in a parade of the department, including the new auto apparatus. The chiefs present were: Chief John Stagg, of Paterson; Chief W. J. Black, of Atlantic City, who presided in the morning; Chief August Gurstung, of Elizabeth; ex-Chief Robert Kiersted, of Newark; Chief Dunn, of Hoboken; Chief Charles Bowker, of Passaic; Chief O'Neill, of Ridgewood; Chief A. G. Burr, of Bordentown; Chief George Arnett, of Lambertville; Chief Hartley, of Haledon; Chief Elforth, of Camden; Chief Frank Ingold, of Edgewater; Chief Thomas P. Logan, of Boonton; Chief Peter F. Godsprey, of Englewood, and Chief William P. McCullough, of North Plainfield.

#### American Railway Engineering Association

At the meeting at the Congress Hotel, Chicago, March 19-20, the report made by the committee on wood preservation is of some interest to municipal engineers. Discussion of this report centered on the proposed revisions to the specifications for creosote oil. Ob-

jection was made to the presentation of a specification for a No. 2 and a No. 3 grade on the ground that it might lower the standards of quality of the treatment. The committee explained that this was done simply to meet a commercial condition which cannot well be avoided in that creosote meeting the No. 1 specification cannot be had in a great many cases. The No. 2 and No. 3 specifications, which differ from the No. 1 only in allowing slightly greater percentages of distillation, meet the needs of many cases and may offer some price advantages. It is stated, however, that where these grades are used it is desirable to inject a greater quantity per cubic foot. It was pointed out that there are cases where the use of such grades would be economical because of the probability of ties wearing out in the track before they were made useless by decay. S. R. Church, who was invited to speak from the manufacturer's point of view, stated that any of these three oils would prove an effective preservative. He also observed that there is a constant effort among the manufacturers to improve quality.

#### National Drainage Congress

The Second National Drainage Congress will meet on April 10 to 13, at New Orleans. Its objects are (1) to promote knowledge concerning land reclamation where drainage is beneficial, and also concerning irrigation in such regions; (2) to promote navigation by drainage canals and the improvement of streams connecting with such canals; (3) to conserve water for drainage, humid-land irrigation, or flood protection purposes; (4) to conserve natural resources pertaining to agriculture; (5) to restore and preserve soils by rotation, fertilization and overflow of silt; (6) to remove the unsanitary conditions due to undrained lowlands; (7) to facilitate conference among people interested in drainage and related subjects, especially to promote concerted action among organizations interested in the proper utilization of natural resources; (8) to provide means for bringing the drainage needs of the country before State and Federal governments.

#### Calendar of Meetings

**April 16-17.**  
**Tri-State Water and Light Association of the Carolinas and Georgia.**—Annual Meeting, Salisbury, N. C.—J. W. Neave, Secretary, Salisbury, N. C.

**April 18-20.**  
**American Electrochemical Society.**—J. W. Richards, Secretary, Lehigh University, South Bethlehem, Pa.

**May 14-17.**  
**National Fire Protection Association.**—Annual Meeting, Chicago, Ill.—F. H. Wentworth, Secretary, 87 Mill Street, Boston, Mass.

**May 16-18.**  
**Ohio Society of Mechanical, Electrical and Steam Engineers.**—Annual Meeting, Pittsburgh, Pa.—F. E. Sanborn, Secretary, Ohio State University, Columbus, O.

**June 3-5.**  
**American Water Works Association.**—Annual Convention, Louisville, Ky.—John M. Diven, Secretary, Troy, N. Y.

**June 10-12.**  
**Mayors Conference of New York.**—Third Annual Meeting, Utica, June 10-12.—Mayor C. C. Duryee, President, Schenectady, N. Y.—C. C. Capes, Secretary, New York.

**September 24-26.**  
**Central States Water Works Association.**—Sixteenth Annual Convention, Detroit, Mich.—R. P. Bricker, Secretary, Shelby, O.

## PERSONALS

BLOYS, J. E., Honey Grove, Tex., has been elected Fire Chief, succeeding W. T. Shortal, resigned.

DURBIN, W. H., Chicago, Ill., has been appointed Superintendent of Filtration by the Water Works Board.

EDMONSTON, GEORGE W., Montclair, N. J., who has been Superintendent of the Collection of Ashes and Garbage at Montclair, has resigned.

KIENLE, JOHN, Wilmington, Del., Chief Engineer of the Water Department, has been granted a month's leave of absence and will sail for Panama on April 6.

McMULLEN, ROBT. F., Schenectady, N. Y., has been appointed Assistant Engineer in the Bureau of Engineering, Department of Public Works.

MEALING, DR. W. E., Mayor of North Augusta, S. C., has resigned.

NICE, BENJAMIN, Reading, Pa., has been elected General Highway Inspector by the Board of Public Works.

RODGERS, A. W., Salamanca, N. Y., has received the appointment of Chief of Police.

RODDY, DR. LOUIS H., Health Officer of Cameron, Tex., has resigned.

SCHAF, JOSEPH C., Indianapolis, Ind., has been elected President of the Advisory Commission to Mayor Shank.

TRAVIS, FRANK M., Torrington, Conn., has been appointed Superintendent of the Torrington Water Co.

WAGNER, GEORGE, Conyngham, Pa., has been elected Chief of Police of Bloomsburg, Pa.

WILLS, HARRY L., York, Pa., has been appointed Chief Engineer of the York Fire Department.

The following Mayors have been elected:

#### IOWA

Cedar Rapids—Louis Roth.  
Des Moines—James R. Hanna.  
Burlington—Frank Norton.  
Sioux City—A. A. Smith.  
Waterloo—Rhea C. Thompson.  
Buffalo City—L. E. Eslick.  
Modale—W. W. Morton.  
Ogden—R. W. Casey.  
Kellogg—James Boyle.  
Danbury—C. F. Seibold.  
Gowrie—C. H. Woodfed.  
West Liberty—Chas. J. Mackey.  
Clear Field—H. T. Swope.  
Bancroft—John P. Mosef.  
Williamsburg—J. O. Ogt.  
Spencer—Eugene Bender.  
Roland—J. P. Larson.  
Carroll—S. H. Johnston.  
Hopkinton—D. C. Ohler.  
Dallas Center—S. A. Sumner.  
West Side—E. B. Spottswood.  
Ackley—J. S. Roberts.  
Pleasantville—Mel Dyer.  
Murray—W. H. Riggles.  
Northwood—H. C. Finch.  
Glidden—W. H. Porter.  
Sidney—Tom Hatton.  
Woodbine—Wells Dewel.  
Bloomfield—W. W. Wishard.  
Magnolia—A. F. Reymulla.  
Logan—J. C. Williams.  
Story City—Alex. Henderson.  
Allison—Z. Elliott.  
Adair—S. H. Wark.  
Cresco—E. L. Davenport.  
Orange City—H. Slickerveer.  
Greenfield—H. J. Chapman.  
Le Grand—E. E. Richards.  
Sumner—J. H. Noon.

#### WEST VIRGINIA

Grafton—Chas. Stolzenfels.

## MUNICIPAL APPLIANCES

### Stone Block Making Machine

A. E. Sylven, 29 Broadway, New York, is the American agent for the machine for making stone paving blocks shown in the illustration. The machine is essentially a belt-driven friction drop-hammer, in which the monkey is attached to a lifting board, and is fitted with a special form of hammer-head. The anvil, on which the stone to be split is placed, consists of a long, massive steel chisel, so fixed in the anvilblock that it is easily removable for sharpening. By merely pressing on the foot lever or releasing it the monkey carrying the hammer-head is made to rise to or fall from any desired height; the operator has thus complete control over the strength of the blow. The machine or machines are erected in the quarry in such a way that the blocks can be delivered in the most direct manner possible down a shoot, and so on to a platform within easy reach of the operator. The blocks should not exceed 12 to 13 inches in depth, and should not be too large for the operator to handle easily. Experience has shown that labor spent in the quarry on roughly squaring the blocks amply repays itself in increased output of the machines, both in quantity and quality, and greatly diminished waste of stone.

The operation is as follows: The operator takes one of the blocks from the end of the bench where it has been delivered by the shoot and lifts it on to the chisel, arranging it in the place he wishes to split it. He then gives the block two or three light quick blows with the hammer so as to indent the stone and stun it along the desired line of cleavage. The monkey is then raised to the required height and a heavier blow is given to split the stone.

In this way the block is cut up into the required sizes, a single blow of the hammer being generally sufficient to split the smaller ones. When starting to cut up a block, the operator should begin by splitting it along the line of its best cleavage. It is of course most economical to make several different sizes at the same time so as to cut the blocks with least waste.

The whole operation is said to be exceedingly simple, and an intelligent laborer should very soon be working the machine so as to give its maximum output, which is about 7 tons a day when making large sets only and about 4½ to 5 tons when making sets of mixed sizes in a 9-hour day. It is impossible to give exact figures for the output, as much depends on the kind of stone, on the quality of the blocks and on the skill of the operator.

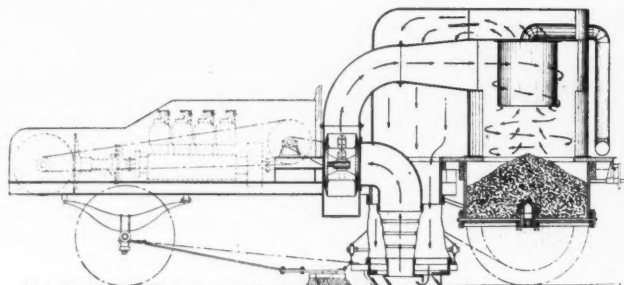
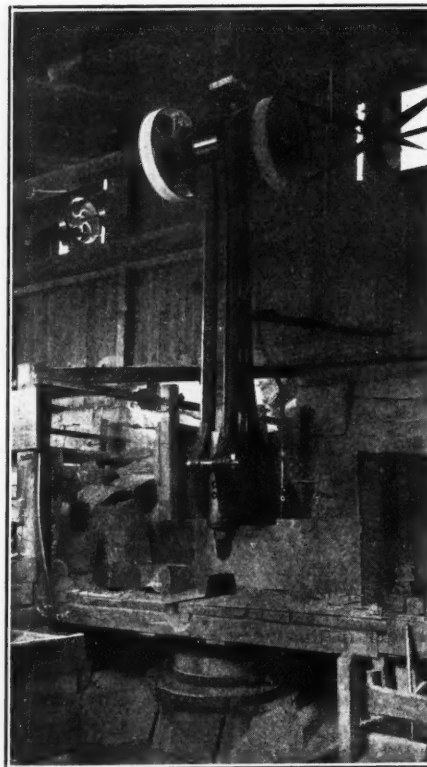


DIAGRAM FURNAS PNEUMATIC SWEEPER.

Many of the sets are marketable as produced by the machine, but for the best sets subsequent trimming is required. The small sets referred to in the figures below are finished by the machine alone.



STONE BLOCK MAKING MACHINE.

The following is the report of a 10-hour run of a battery of 16 of these machines: 2,096 large sets; 6,222 small sets, 2¾ to 3¾; 4,472, 4 to 4½, and 2,196 special blocks.

The power required to drive the machine is 1½ h.p. The transmission being by one open and one crossed belt.

The long edged chisels require sharpening two or three times a day. The hammer head requires touching up every week or fortnight. There are over 400 of these machines in operation in Europe. One company in Sweden operates 62 of them, making about 700,000 square yards yearly.

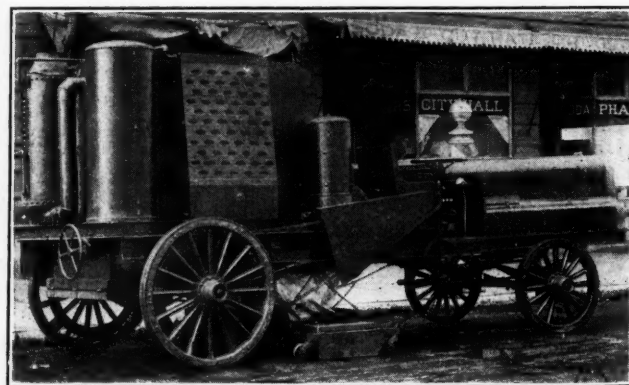
The sets are used for the pavement called Durax in England and Kleinfaster in Germany.

### Pneumatic Motor-Driven Street Sweeper.

The Furnas Pneumatic Sweeper Company, 710 Majestic Building, Indianapolis, Ind., have placed on the market a motor-propelled pneumatic street cleaning machine. This machine was recently described in a paper before the Indiana Engineering Society, by C. A. Tripp, consulting engineer, Indianapolis, substantially as follows:

The sectional view shows the air circulating system, which is the interesting and all important part of the machine. The general plan is that the air used for sweeping is recirculated, being used over and over again, with the exception of a small amount which is taken out to provide for leakage as will be explained later. The sweeping hood consists of an inner and an outer portion. The outer portion is enclosed by short curtains, or lines, made of canvas, to which small plates of iron are riveted. These plates serve to weight down the canvas and also to take the wear, due to dragging on the street. They are sufficiently light, however, to pass over the dirt, and not act as a brush or scraper. The inner portion is separated from the outer portion on the front side by a similar line, but on the rear side by a metal strip which runs at a distance of about one-half inch from the street surface. This is the real sweeping point. The air comes down in the outer portion at a comparatively low velocity and at substantially atmospheric pressure. The inner portion is under the full suction of the fan. The air rushing through this narrow opening at high velocity, and in a direction practically parallel with the street picks up the dirt, which is then carried up through the opening in the center of the inner portion. As shown, this opening is connected directly to the fan suction.

From the fan the air and dirt enter the centrifugal separator, which is directly above the dirt box. Here a small amount of steam is blown in from a small steam boiler. After the air has deposited the dirt picked up from the street it leaves by the center tube and returns directly to the outer portion of the hood. Within the center tube by which the air leaves the separator is a small pipe, which is open at the lower end. A small amount of the air leaves by this pipe, which leads to the ash pit of the boiler. The amount of air taken out through this pipe is equal to the inward leakage to the outer portion of the hood. The pressure in the separator, and hence the amount of air leaving by the small pipe, is controlled by the damper shown in the passage between the separator and the hood.



GENERAL VIEW MOTOR-DRIVEN PNEUMATIC SWEEPER.



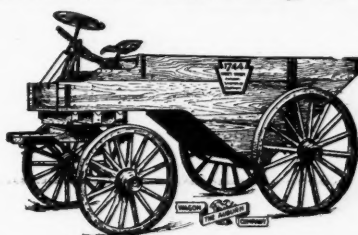
Indirectly this determines the pressure in the outer portion of the hood, which is maintained at or slightly below that of the atmosphere, so that any leakage is inward, thus preventing dust. The small steam boiler serves a double purpose. Steam added to the dirt and air as it enters the separator, increases the weight of the dust particles and thus aids in the separation. It also dampens the mass of dirt so that dust is prevented when dumping. The air returning to the hood, and therefore the air leaving the separator by the small off-take pipe carries a fine dust which it is very difficult to separate. The fire in the boiler serves as an effective filter for removing this from the small volume of air which must be discharged, while the air acts to produce draft for the fire. The power equipment consists of a 6 x 6 four-cylinder engine, located at the forward end of the machine. The sweeping fan is driven from the rear end of the engine shaft through a cone clutch and spur gears running in oil. The power for propulsion is taken from the front end of the shaft and transmitted through a friction drive and differential jack shaft to the rear wheels. The maximum speed of travel is five and one-half miles per hour, which may be reduced by the friction transmission, as required by the condition of the street being swept. The machine is operated by two men. The driver controls the steering and propulsion and fan speeds. The operator controls the pressures in the air system, raises and lowers the hood as required by means of the two levers shown, fires the boiler and dumps the dirt.

The manufacturer states that an average day's work would be about 150 great squares—about eight miles of street. As to the quantity of dirt removed, .2 cubic yards per great square is considered as an average quantity, although as much as .35 has been removed.

#### New Spreading Wagon

The Auburn Wagon Company, Martinsburg, W. Va., have placed on the market a new design of contractors' spreading wagon. The spreading is accomplished by means of a sliding door operated by a wheel placed side of the driver. A pinion on the shaft of the wheel engages teeth on a rod connecting directly with the door. The

bottom of the wagon slopes toward the point of delivery from both ends, having a V-shaped section. The discharge gate, as shown in the illustration, is in the forward half of the pocket formed by the bottom. The wagon spreads stone or other material to any desired thickness, and dumps part or all of the load in one place. The driver controls the sliding dumping door from his seat, it being regulated by a gauge. The stone is spread for a width of about 4 feet. The wagon is built in 1½, 2, 2½ and 3-yard sizes. It has three select white oak bolsters, and in other respects is simple, strong and substantial. The same company manufactures a bottom dump wagon 1½ to 3 cubic yards capacity; an end-dumping wagon, capacity 1½ to 2½ cubic yards, or 1,400 bricks; a steel axle cut-under contractors' wagon; a steel axle contractors' dump cart, and a New England four-wheel tip cart. The Auburn Wagon Company was originally established at Auburn, N. Y., in 1882, but in 1896 removed to Martinsburg, W. Va.,



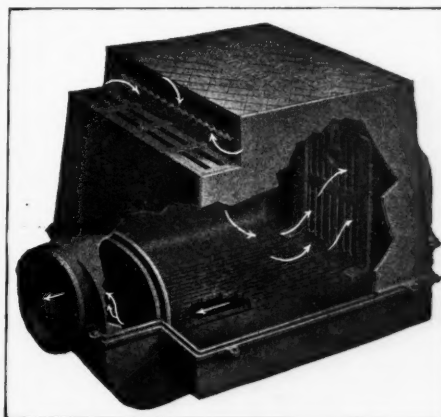
"NEW AUBURN STONE SPREADER"

to secure the advantages of being located in the West Virginia hardwood timber belt, where the finest wagon timber in the world grows.

#### Iron Sanitary Basin

Gschwind & Company, Youngstown, O., have placed on the market an iron sewer basin which is claimed to have a number of sanitary advantages. As shown in the illustration, the street wash passing in at the curb opening falls into the tank, flows through the end grating, down under the draining bottom, and up through the exit into the sewer, thus maintaining a water trap. The inside measurements of the basin are 36 by 42 by 36. The interior finish is smooth and there are no angles where refuse can collect. The cost of installing the basin is small. The manufacturers state that an intelligent la-

borer can excavate for and place one in a few hours. Cleaning these basins is said to be a quick, easy one-man process.



ALL IRON CATCH BASIN.

ess. Instead of two or more men in rubber hip boots laboring long with ropes and buckets, one man with a scoop-shovel transfers the sediment from the basin to the cart.

#### Motor Sprinkling Wagon

The Auto Car Company, Ardmore, Pa., have made for the city of Pensacola, Fla., an automobile street sprinkling wagon shown in the illustration. The tank is a 300-gallon cypress tank of standard Studebaker construction, as are also the sprinkling valves and the system of control. The chassis is the regular auto car design of 3,000 pounds capacity called Model XXI O. C. The frame is built of pressed steel channels reinforced with hickory. The driver's seat is located over the motor so as to give a maximum body platform with a minimum wheel base. There is a speed governor limiting the speed; by this device the speed can be limited to any maximum up to 20 miles an hour. A seat is fitted which makes it impossible for the driver to go beyond the predetermined regulated speed. It is believed that 12 miles an hour is about the right speed for the sprinkling wagon. The front axles are tubular with roller bearings in wheel hubs. The rear axle is full floating type with auto-car patented double-gear reduction; roller bearings throughout. The service brakes, 14 inches in diameter, 2½ inches wide, are actuated by a foot pedal and operated externally on drums on rear-wheel hubs. The clutch is a patented, floating ring, self-aligning, dry plate clutch with cork inserts at contact surfaces. The gear shift and emergency-brake levers are at the side; the throttle lever is on the steering wheel and the foot throttle is at the right-hand side of the foot brake. The radiator is of the vertical tube type with centrifugal water pump. The motor is two-cylinder, four-cycle, horizontal opposed, 4¾ inches bore by 4½ inches stroke, 18 horse-power, A. L. A. M. rating. All valves are mechanically operated and the crank shaft is mounted on annular ball bearings. The front springs are semi-elliptic, 2½ inches wide, 40 inches long. The rear are platform springs 2½ inches wide. The transmission is sliding gear type; three speeds forward, one reverse, direct drive on high speed. The tread is 58 inches; wheel base 97; wheels, wood, artillery type, with solid tires. The motor and change speed transmission, with clutch connecting them, are mounted on a pressed steel sub-frame.



MOTOR-DRIVEN STREET SPRINKLER.

## INDUSTRIAL NEWS

**Cast Iron Pipe.**—Chicago—Buying has been limited to small orders. Quotations: 4-inch, \$27; 6 to 12-inch, \$25; 16-inch and up, \$24.50. Birmingham—Manufacturers state that sales have been good in volume and price. Inquiries continue to come in at a good rate. Conditions are better than at this time last year. Shipments are going forward at a very satisfactory rate and there is practically no accumulation of pipe in any of the Alabama yards. According to present indications the year will be a record breaker. Quotations: 4 to 6-inch, \$23; 8 to 12-inch, \$22; over 12-inch, average, \$21. New York—Private buying continues in good volume, but no large lettings are in sight. Quotations: 6-inch, car loads, \$22 to \$23.

**Lead.**—Lead is steady, with prices for April and May slightly up. Quotations: New York, 4.35c.; St. Louis, 4.20c.

**New Road Mixture.**—Mayor Donnelly, Commissioners Burk, Fell and La Barre and City Engineer Swan and Harris, of Trenton, N. J., went to Bordentown to make a personal investigation of the road material that has been patented by Thomas Barrett. Mr. Barrett mixed a batch of his material while the Trenton party was present, and he also demonstrated the qualities of his pavement. The Barrett material is made of Delaware River gravel, sand, crushed oyster shells, bound with a new flux and asphalt. The samples shown by Mr. Barrett disclosed no apparent voids. The inventor said that if a road could be built without voids it would be the perfect road. This is what Mr. Barrett claims for his road. The most important claim about the Barrett material is that it will reduce the cost of the road to a little more than one-half of what is ordinarily being paid. The Trenton commissioners were favorably impressed with the demonstration, and told Mr. Barrett that as soon as he was ready to put down roads he would be given a chance in Trenton. Commissioner Fell asked Mr. Barrett to put in a bid for some of the paving which is now being advertised, and it is likely that Mr. Barrett will comply with the request. Engineer of Streets Harry Harris said he liked the appearance of the Barrett material, and entertained only one doubt—that a patent would be allowed for it in view of the far-reaching claims of the Warren Company. Mr. Barrett said that he was certain that his material was in no way an infringement on the Warren patents, and was willing to go into court any time to defend his output.

**Oil Asphalt.**—John J. Stelzer, representing the Sun Oil Company, Marcus Hook, Pa., has taken exceptions to a clause in the paving specifications of the city of Chester, Pa., which require the use of "crude, natural solid asphalt." He states that this would exclude the use of asphalt made by the Sun Oil Company, which is a product of asphalt base oils.

**Auto Trucks.**—The Mack Bros. Auto Company, Allentown, Pa., has acquired the plant of the Unity Silk Company of that place, and after some alterations will equip it with machinery for the manufacture of trucks.

**Diesel Engine.**—A new Diesel 225-horsepower engine, connected with a 160-kilowatt Fort Wayne generator, was recently installed at the municipal lighting plant at Camden N. Y. The choice of power was based on six years' experience with another Diesel. The original equipment consisted of one 170-horsepower Diesel oil engine, connected to a 130-kilowatt Westinghouse generator, and this single unit has been giving most satisfactory service since February 14, 1906, when it was first operated. Of course there have been times during this interval when it has been necessary to shut down the engine for repairs, but this is always a necessity in any class of machinery. It was to remedy this inconvenience and to relieve the overload which the one engine has been carrying that the citizens recently voted to install a second unit of similar design. On January 1, 1907, there were 124 consumers using current. This number has now increased to 243, 25 of these having been added during the past year. The commercial revenue for the year 1907 was \$4,558, and this year amounts to \$5,741. The price of oil consumed in these engines varies somewhat from year to year, but has never exceeded 4½ cents per gallon. As 100 gallons will produce 170 horsepower for about 10 hours, it can easily be seen that the fuel cost is very low. The financial condition of the plan has improved wonderfully, and from a deficit of \$245, shown in the report of March 1, 1908, the commission is now able to show nearly \$6,000 on the right side of the ledger. The income of the plant will be sufficient to take care of the additional expenditure involved by the installation of new equipment, and as the interest charges decrease annually, the time will come when Camden will light its streets for practically nothing. At the present time only \$50 per arc is paid a year. In all respects Camden's plant is a strong plea for municipal ownership, and with the apparatus just installed will be ample to care for the electrical development of the village for some time to come. It is believed that the large engine will carry the present load alone, but the machines are so connected that both may be operated at the same time. With the two units, Camden can rest assured of continual service.

**Life-Saving Net.**—The Cory-Patterson Manufacturing Company, Greenfield, O., has shipped three Browder life-saving nets to the Trenton (N. J.) fire department. The nets are devices showing much improvement over the old style which has been in use in the department. With four men holding the net at a test, George Voorhees, of the headquarters, who weighs 215 pounds, jumped into it from the balcony of the dormitories. The men experienced no difficulty in holding the net with Voorhees in it.

**Underground Cables.**—The Standard Underground Cable Company, Pittsburgh, will erect a building 40 x 100 feet, two stories, to be used as a machine shop for the manufacture of terminals and junction boxes used in connection with underground cables. It will be equipped with special machinery for its purposes.

### Colorless Road Oil

The Prime White Road Oil Co., First National Bank Building, Cincinnati, Ohio, have placed on the market a road oil described as colorless, odorless and stainless. The following account of the experience with it on Cincinnati streets is interesting:

In the late summer of 1911 the Director of Public Service of Cincinnati issued a permit to treat the streets with a new dust layer named "Perennial Prime White" road oil. This is an odorless, colorless neutral oil analyzed by the U. S. Government as follows:

General characteristics	Pale yellow, clear, oily fluid
Specific gravity 25°C./25°C.	0.845
Viscosity ° Engler 100 c.c. at 25°	specific 3.04
Viscosity ° Engler 100 c.c. at 50°	specific 1.6
Flash point °C.	150
Burning point °C.	183
Loss at 163° C., 5 hrs.	12.8%
Character or residue	Reddish brown, oily, greasy fluid with brownish precipitate
Bitumen soluble in CS <sub>2</sub> (total bitumen)	100%
Organic matter insoluble	0.0%
Inorganic matter insoluble	0.0%
Per cent. of total bitumen insoluble in 86° B. naphtha	0.00
Fixed carbon	0.37%

About 40,000 square yards of all classes of streets were treated under the direction of J. H. Sundmaker, engineer and service director. The report shows that on sheet asphalt streets the immediate effect was to make them slippery for a short time.

On macadam or gravel streets the dust was entirely suppressed without any stain, odor or interference to traffic.

On the brick streets the result was a surprise. The brick absorbed a small portion and the cracks between the bricks absorbed a considerable portion and completely held the dust, which always gathers there and is sucked up by the wind or passing automobiles. Neither the brick nor macadam streets needed any water sprinkling again that season. The brick was slightly less noisy.

It was found that the streets that had previously been treated with tar or the black oils the binder was restored and given new life.

The Service Director of Cincinnati has issued permits up to April 1, 1912, for the treatment of upwards of sixty miles of macadam and brick streets with this material; Richmond, Indiana, 800,000 square yards. Other cities, Dayton, Columbus and Indianapolis, are said to have adopted it.

The cost of applying "Prime White" is reported as one-tenth of a cent per square yard. The material, labor, freight and all costs aggregate less than 2 cents a square yard for a dustless road for twelve months.

The superintendent of one of the parks stated, after it was applied on the children's playgrounds, they were rendered entirely dustless and the children could roll on them without soiling their clothes.

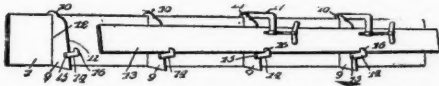
**Internal Combustion Engine.**—Geo. A. Dow, of the Dow-Mirrlees-Diesel Engine Company, now in England, has secured rights of manufacture for the United States of an engine of the Diesel type, and work is to be started shortly on a manufacturing plant near the present Dow pump works on the tidal canal at Alameda, Cal. It is reported that an investment of \$1,000,000 will be put into the plant, though no inquiry for tools is expected for several months. This company has applied for change of name to Dow-Willans-Diesel Engine Company.



## PATENT CLAIMS

**1,020,887. CURBING, ETC.** Stephen N. Cornwall, Springfield, Mo. Serial No. 649,081.

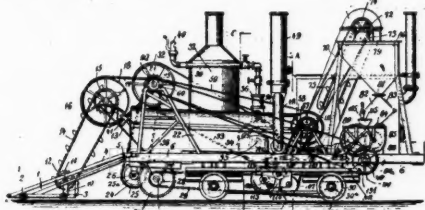
A device of the character specified, comprising a plurality of series of plates or boards, the members of each series being laid in longitudinal alignment and in laterally spaced relation to the other series, each plate or board having one end provided with a substantially V-shaped groove and the side edges of the other end being beveled to fit the groove of the adjacent plate or board, an open frame at each end of the plates or boards of one series, a bolt passing through the plate or board adjacent to each frame, each frame having threaded opening for engagement by the bolt, a stake passing



through each frame for holding the plates or boards upright, a set screw threaded through each frame and engaging the stake, a plurality of templets having their side edges inclined toward each other and arranged between the series and substantially perpendicular to the plates or boards, each templet having a hook at its upper end for engaging the plates or boards connected to the stakes, and a hanger bar pivoted at one end to each templet and provided at the other end with an upwardly extending lug for engaging the outer face of the adjacent board or plate of the other series, and clamps engaging the opposite members of the series for pressing them toward each other.

**1,020,633. SELF-CONTAINED MACHINE FOR PREPARING ROAD-WEARING SURFACES.** Paul Carrington Brennan, New York, N. Y., assignor, by mesne assignments, to the United States Asphalt Refining Co., New York, N. Y., a Corporation of South Dakota. Serial No. 468,761.

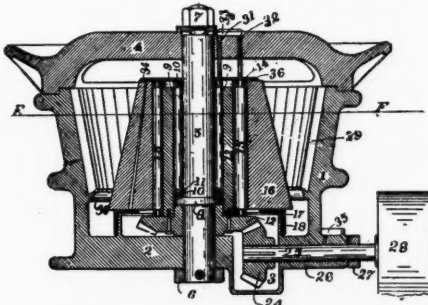
A self-contained apparatus of the character described comprising a truck, means thereon for causing the travel of said truck, a folding platform hinged to said truck and adapted to rest on the ground, a drier, an elevator adapted to convey



material from said platform to said drier, a screw conveyor adapted to receive material from said drier, a mixer, an elevator adapted to convey material from said conveyor to said mixer, a tank adapted to discharge into said mixer and mechanism for operating the parts.

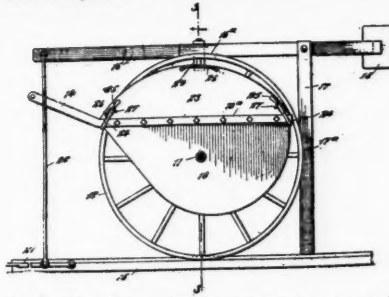
**1,019,997. STONE-CRUSHING MACHINE.** Edgar B. Symons, Fort Wayne, Ind., assignor, by mesne assignments, to Smith & Post Co., Milwaukee, Wis., a Corporation of Wisconsin. Serial No. 195,459.

In a crushing machine, the combination of an outer crushing shell having a



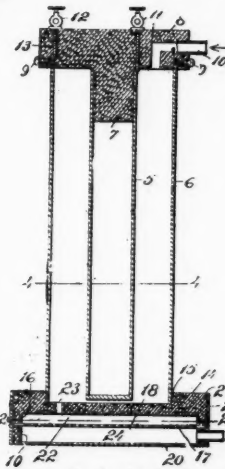
spider arm bottom and a removable crown piece, a centrally located tie-shaft fixed to said bottom and crown piece, an eccentrically mounted crusher head movable on the shaft and means for operating said head.

**1,019,917. CONCRETE-MIXER.** Arthur W. Ransome, New York, N. Y. Serial No. 425,451.



A device for mixing concrete comprising a cart body, an axle to which the body is fastened, cart wheels loose on the said axle, means for releasably holding the wheels against movement, a cover for the cart body arranged to move in and out of action, in unison with the means for holding the wheels and means for imparting rotation to the said axle, such means having releasable connection therewith.

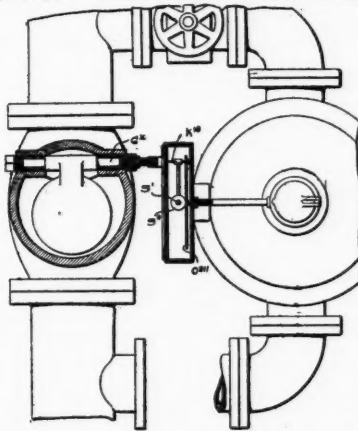
**1,020,001. ELECTRIC WATER PURIFIER AND FILTER.** Ada Henry Van Pelt, Los Angeles, Cal. Serial No. 643,214.



In a combined electrolytic purifier and filter, a pair of electrodes, a filtering chamber below the electrodes, comprising a base member adjustably secured to the lower end of one of the electrodes, a shell surrounding said base member, and removably attached to said base member, a filter within the said chamber, and an inlet and outlet for said chamber.

**1,020,037. WATER-METER.** Edward V. French, Lynn, Mass. Serial No. 429,649.

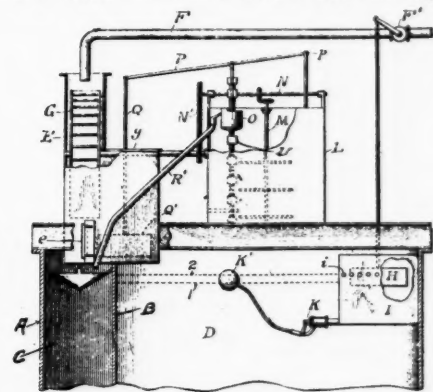
A water meter comprising a main passageway, a check-valve pivotally mounted



in said passageway, the weight of the check-valve and connected parts being so distributed with respect to the pivotal axis of the check-valve as to secure a substantially constant moment during the movement of the check-valve, a by-pass around said check-valve, a metering mechanism located in said by-pass for measuring the amount of flow therethrough, means driven by said metering mechanism for indicating the lapse of time, and means operated by the check-valve for indicating and recording thereon the positions of the check-valve while open.

**1,019,784. WATER-TREATING APPARATUS.** Walter H. Green, Chicago, Ill., assignor to Northern Water Softener Co., Madison, Wis., a Corporation of Maine. Serial No. 597,800.

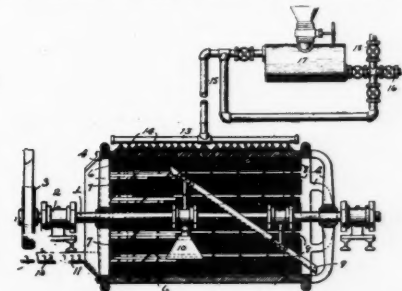
In a water treating apparatus, a reservoir for treated water, means governed by the water in the reservoir for causing



water intended to be treated to be supplied at a gradually varying rate as the water in the reservoir rises to or falls from a predetermined lower level and at a constant rate while the water level remains between said lower level and a predetermined higher level.

**1,019,907. SEWAGE-SEPARATOR.** James S. Miller, Reading Pa. Serial No. 636,826.

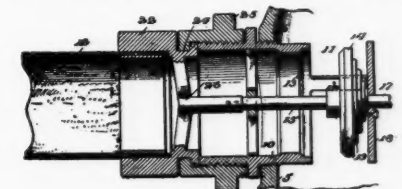
In a sewage separator, the combination of a cylinder made up of a pair of spiders, a series of longitudinal bars and wire screen sections connecting the bars; a power shaft on which the cylinder is mounted; a series of screw blades secured to the inside of the longitudinal bars; a series of wire mesh buckets secured to the inside of the cylinder; a central, in-



clined conveyer chute supported on the power shaft inside the cylinder; a counter balance for keeping the chute in normal position when the cylinder revolves and means comprising a series of spray nozzles for cleansing the screen sections in the cylinder.

**1,020,917. HYDRANT OUTLET.** Murray Owen Linscott and William Alexander McIntosh, Beverly, Mass. Serial No. 611,465.

The combination with a valve casing having its rear end provided with outlet ports, a transverse bar arranged within the casing and provided with an opening, there being an opening formed in the rear end of the casing and arranged in alignment with the first mentioned opening, a valve having a stem on one end thereof slidably mounted in the opening in the transverse bar and provided at its other end with a rod extending into the opening in the rear end of the casing, a spring disposed between the rear end of the casing and the valve for normally holding the latter in closed position, and a hose coupling having an impact rod secured thereto and adapted to engage the adja-



cent end of the valve stem for opening the valve when the coupling is connected with said casing.

## THE WEEK'S CONTRACT NEWS

Relating to Municipal and Public Work—Street Improvements—Paving, Road Making, Cleaning and Sprinkling—Sewerage, Water Supply and Public Lighting—Fire Equipment and Supplies—Bridges and Concrete Work—Sanitation Garbage and Waste Disposal—Police, Parks and Miscellaneous—Proposals and Awards.

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also corrections of any errors discovered.

### BIDS ASKED FOR

STATE		RECEIVED UNTIL	NATURE OF WORK.	ADDRESS INQUIRIES TO
<b>STREET IMPROVEMENTS</b>				
Washington..	Bellingham.....	Apr. 6.....	Constrn. 3½ miles warrenite or concrete pav't.....	County Comm.
Alabama.....	Chatom.....	Apr. 6, 3 p.m.....	Constrn. 5 miles State aid road.....	County Commissioners.
Pennsylvania..	Pittsburgh.....	Apr. 6, 10 a.m.....	Furn. 300,000 gal. asph. binder, also 200,000 sq. yds. asphaltic surface material, 700 M. paving brick blocks.....	R. J. Cunningham, Co. Compt.
Hawaii.....	Pearl Harbor....	Apr. 6, 11 a.m.....	Constrn. 22,575 sq. yds. oil macadam.....	Commandant Naval Sta., Wash'gton.
Tennessee.....	Chattanooga....	Apr. 6, 10.30 a.m.....	Pavg. with asphalt macadam.....	A. N. Sloan, Comm.
Illinois.....	Bement.....	Apr. 6, 1 p.m.....	Pavg. Bodman street; cost, \$20,000.....	W. J. Day, Pres. Bd. Local Imp.
Iowa.....	Marshalltown....	April 7.....	Constrn. 33 blocks of concrete paving.....	W. H. Steiner, City Engineer.
California.....	South Pasadena..	April 8, 5 p.m.....	Improving roads, cost \$85,000.....	D. F. Dupuy, City Engineer.
Alabama.....	Talladega.....	Apr. 8.....	Constrn. 4½ miles gravel road.....	W. S. Keller, State Highway Engr.
California.....	San Bernardino..	Apr. 8, 11 a.m.....	Constrn. highways and bridge.....	J. Bright, Jr., County Surv.
Indiana.....	Muncie.....	Apr. 8, 10 a.m.....	Improving highway.....	Francis M. Williams, Aud.
North Dakota..	Wahpeton.....	Apr. 8.....	Constrn. sidewalks, curbs, etc., for year.....	C. M. Olson, City Aud.
Canada.....	Port Arthur, Ont.	Apr. 8.....	Constrn. 22,500 yds. pav't.....	L. M. Jones, City Engr.
Wisconsin.....	Waukesha.....	Apr. 8.....	Constrn. 32,500 yds. bit. macad., etc.....	M. R. Butler, City Engr.
South Dakota..	Rapid City.....	Apr. 8.....	Constrn. cement sidewalks and cross walks.....	A. K. Thomas, City Aud.
Indiana.....	Attica.....	Apr. 8, 7.30 p.m.....	Imp. 2 streets.....	Samuel Turman, City Engr.
Indiana.....	LaPorte.....	Apr. 8.....	Constrn. 675 yds. brick paving.....	Wm. Kruger, Clk.
North Dakota..	Fargo.....	Apr. 8, 8 p.m.....	Constrn. 40,000 yds. pavement.....	E. R. Orchard, City Aud.
Wisconsin.....	Portage.....	Apr. 9.....	Constrn. vit. brick paving.....	A. J. Klenert, Chm. Comm.
Georgia.....	Elberton.....	Apr. 9, 8.30 p.m.....	Constrn. 25,000 yds. bit. macad., etc.....	J. M. Webster, Mayor; H. S. Jauden Eng. Co., Savannah.
Minnesota.....	Winona.....	Apr. 9.....	Constrn. 21 miles macadam road.....	Jos. Winczewski, County Aud.
Florida.....	Ft. Pierce.....	Apr. 9, 11 a.m.....	Constrn. 90,000 cu. yds. hard surface road material.....	Co. Comm.; D. D. & C. M. Rogers, Engrs.
Michigan.....	Sault Ste. Marie..	Apr. 10, 2 p.m.....	Pavg. post office driveway.....	C. H. Scott, Custodian.
Ohio.....	East Youngst'n..	Apr. 10, noon.....	Constrn. sidewalks.....	P. J. Carney, Clk.
Ohio.....	Bowling Green..	Apr. 10.....	Imp. several roads with macad. and bit. macad.....	County Comm.
Montana.....	Missoula.....	April 10.....	Constrn. 24,000 yards vitrified brick pavement.....	F. E. Buck, City Engineer.
Maryland.....	Brunswick.....	Apr. 10.....	Constrn. 14,000 sq. yds. tarvia macad.....	Dr. A. G. Horine, Mayor.
North Carolina	Charlotte.....	Apr. 10.....	Constrn. 161,000 sq. yds. pav't, 34,000 yds. cement sidewalk, 50,000 ft. new curb.....	A. H. Wearn, City Clk.
Mississippi.....	Boonville.....	Apr. 11, 2 p.m.....	Constrn. 18,000 lin. ft. concrete sidewalk.....	E. E. Walton, Mayor.
Illinois.....	Danville.....	Apr. 11.....	Constrn. county line road.....	L. W. Borders, County Aud.
Ohio.....	Cleveland.....	Apr. 11, noon.....	Constrn. pav't and laying sidewalks on number of streets..	W. J. Springborn, Dir. Pub. Serv.
Kentucky.....	Louisville.....	Apr. 12, 2 p.m.....	Pavg. with brick a number of streets.....	J. D. Wakefield, Chm. Bd. Pub. Wks.
New York.....	Brooklyn.....	Apr. 12, 11 a.m.....	Pavg. with wood block, asphalt, granite, laying sidewalks, etc., 25 streets.....	A. E. Steers, Boro. Pres.
Illinois.....	Moline.....	Apr. 13.....	Constr. 9,000 yds. brick & 20,000 asph, 21,000 ft. curb & gut.	Board Local Imp.
Texas.....	Victoria.....	Apr. 15, 10 a.m.....	Constrn. road work; cost, \$200,000.....	County Comm.
Indiana.....	Anderson.....	Apr. 15.....	Constrn. 14 gravel roads.....	J. D. Benefiel, County Aud.
W. Virginia.....	Huntington.....	Apr. 15, 1.30 p.m.....	Pavg. number of streets and alleys with vit. paving brick.....	John Coon, Comr. Sts. & Parks.
Pennsylvania..	Freeport.....	Apr. 15, 7.30 p.m.....	Constrn. 2,800 sq. yds. vit. pav't, gradg. & curbg. 2 streets..	G. B. Findley, Boro. Engr.
Florida.....	Lakeland.....	Apr. 15.....	Laying pavement.....	Board of Bond and Trustees.
Ohio.....	Jefferson.....	Apr. 15.....	Pavg. with tar concrete several streets.....	T. D. Miller, Village Clk.
West Virginia..	Huntington.....	Apr. 15, 1.30 p.m.....	Pavg. alleys with brick.....	A. B. Maupin, City Engr.
New York.....	Albany.....	Apr. 15, 17 and 19.....	Constrn. 358 miles of roads; cost, \$5,000,000.....	State Highway Comm.
Pennsylvania..	Brownsville....	Apr. 15, 7 p.m.....	Imp. a number of streets.....	C. W. Coulter, Boro. Sec'y.
New Jersey.....	Long Beach.....	Apr. 15.....	Constrn. 6½ miles gravel road.....	Township Comm.
New Jersey.....	Elizabeth.....	Apr. 15.....	Constrn. 10,000 sq. yds. block pav't.....	W. H. Luster, City Surv.
New Jersey.....	Sea Isle City....	Apr. 15.....	Constrn. macad. roadway and cement gutters; cost \$20,000..	Jacob Wells, Chm. Comm.
Texas.....	Victoria.....	Apr. 15, 10 a.m.....	Constrn. county roads.....	J. P. Pool, County Judge.
South Dakota..	Sioux Falls.....	Apr. 15, 9 a.m.....	Constrn. 16,600 sq. ft. paving.....	W. C. Leyse, City Aud.
Ohio.....	Newark.....	Apr. 17, noon.....	Macad. road.....	C. L. Riley, County Aud.
Ohio.....	Cleveland.....	Apr. 17, 11 a.m.....	Imp. North Woodland road No. 2 & Center Ridge rd. No. 2.	John F. Goldenbogen, County Clk.
Kentucky.....	Georgetown.....	Apr. 19.....	Pavg. with brick or asphaltic concrete several streets.....	City Council.
Kentucky.....	Jackson.....	Apr. 20.....	Constrn. 13,000 yds. macadam or telford road.....	W. S. Canning, City Engr.
Ohio.....	Cleveland.....	Apr. 24, 11 a.m.....	Improving Green road.....	John F. Goldenbogen, Clk.
Tennessee.....	McKenzie.....	Apr. 24, 2 p.m.....	Grading and graveling streets.....	F. D. Walpole, Recorder.
Ohio.....	Akron.....	Apr. 25 (about).....	Constrn. brick road.....	G. L. Farnsworth, City Engr.
Illinois.....	Ottawa.....	Apr. 30.....	Pavg. with brick on concrete; cost, \$300,000.....	J. C. Moore, County Aud.
Illinois.....	Rochelle.....	Apr. 30 (about).....	Pavg. with brick on concrete base; cost, \$85,000.....	W. B. M. Henry, Mayor; Aetna Eng. Bureau, Chicago.
Indiana.....	South Bend.....	May 1.....	Constrn. 3 miles crushed granite paving.....	J. W. Harbou, County Aud.
Arkansas.....	Ft. Smith.....	May 1, noon.....	Pavg. Garrison avenue.....	City Engr.
Michigan.....	Holland.....	May 15.....	Constrn. 1½ miles bit. paving; cost, \$45,000.....	H. A. Naberhuis, City Engr.
Ohio.....	Canton.....	June 1.....	Pavg. Broadway with brick block.....	R. F. Harbent, Dir. Pub. Serv.
<b>SEWERAGE</b>				
New Jersey.....	Glen Ridge.....	Apr. 8, 8 p.m.....	Constrn. 6,000 ft. 10-in. tile pipe sewer, etc.....	J. A. Brown, Boro. Clk.
Michigan.....	Pontiac.....	Apr. 8.....	Constrn. 12,000 ft. sewers.....	C. L. Groesbeck, City Clk.
New York.....	Long Island City.	Apr. 8.....	Constrn. 5,362 ft. twin 8 x 7-in. concrete sewers.....	M. E. Connolly, Boro. Pres.
Ohio.....	Massillon.....	Apr. 9, noon.....	Constrn. sanitary sewer.....	J. A. McLaughlin, Clk. Dir. Pb. Serv.
Massachusetts.	Westfield.....	Apr. 10.....	Furn. 8,000 ft. 8 to 18-in. sewer pipe.....	J. L. Hyde, Town Engr.
North Carolina	Charlotte.....	Apr. 10.....	Constrn. 9 miles sewers and drains.....	A. H. Wearn, City Clk.
Connecticut.....	Putnam.....	Apr. 10, 4 p.m.....	Constrn. 16,500 ft. 6 to 12-in. clay pipe sewer, etc.....	Arch. Macdonald, Mayor.
Canada.....	Lethbridge, Alta.	Apr. 11.....	Constrn. 2½ miles sanitary sewers, 3½ miles cement walks.	A. C. D. Blanchard, City Engr.
West Virginia..	Bluefield.....	Apr. 12.....	Constrn. 3,000 ft. 54-in. conc. & 3,400 ft. 15-in. clay pipe sewer.	W. H. Campbell, City Engr.
Florida.....	Lakeland.....	Apr. 15.....	Constrn. sewers.....	Board of Bond and Trustees.
Ohio.....	Lakewood.....	Apr. 15, noon.....	Constrn. several sewers.....	J. W. Chrisford, Dir. Pub. Serv.
W. Virginia.....	Kingwood.....	Apr. 15 (about).....	Constrn. sewer system; cost, \$10,000.....	V. B. Dunn, Mayor; J. K. Monroe, Engr.
Ohio.....	Canton.....	Apr. 15, 10 a.m.....	Furn. culvert pipe.....	J. H. McConell, County Aud.
Ohio.....	Cambridge.....	Apr. 15, noon.....	Constrn. 5,700 ft. 8 to 10-in. clay pipe sewers.....	K. M. Cosgrove, City Engr.
Ohio.....	Hubbard.....	Apr. 15.....	Constrn. 6 miles of sewers.....	City Clerk.
Oklahoma.....	Muskogee.....	Apr. 16, 10 a.m.....	Constrn. brick and tile sewer.....	Chas. Wheeler, Jr., City Clk.
New Jersey.....	Sea Isle City....	Apr. 15.....	Constrn. sewage treatment tank and intercepting sewers....	Jacob Wells, Chm. Comm.
Florida.....	Ft. Pierce.....	Apr. 16, 7 p.m.....	Constrn. 7 miles 6 to 12-in. sewer pipe, etc.....	Co. Comm.; D. D. & C. M. Rogers, Engrs.
Minnesota.....	Mankato.....	Apr. 15.....	Constrn. 9,600 ft. 8 to 18-in. sanitary sewers.....	H. F. Bloomquist, City Engr.



## BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
Canada.....	Sudbury, Ont.....	Apr. 17.....	Constrn. 8,555 ft. 15 to 20-in. sanitary sewers.....	George Elliott, Town Clk.; Chipman & Powers, Engrs., Toronto.
Minnesota.....	Tracy.....	Apr. 18.....	Constrn. septic tank and sludge bed.....	L. J. Fitch, City Recorder.
Nebraska.....	Ft. Omaha.....	Apr. 18, 11 a.m.....	Constrn. reinforced concrete sewers.....	J. L. Clem, C. M. Q.
Pennsylvania.....	Hazleton.....	Apr. 19.....	Constrn. 768 ft. flume.....	Boro. Council.
Ohio.....	Andover.....	Apr. 24.....	Constrn. 5 miles 8 to 12-in. sewers.....	F. A. Woodward, City Clk.
Louisiana.....	New Orleans.....	Apr. 25, noon.....	Constrn. concrete lined and covered sewer, 7,310 lin. ft. terra cotta pipe line, 26 to 6-in. diameter.....	F. S. Shields, Secy. Sew. & Water Bd.
Virginia.....	Roanoke.....	Apr. 30, noon.....	Constrn. sewer.....	W. L. Craft, City Clk.
California.....	Covina.....	May 1.....	Constrn. sewer system; cost, \$45,000.....	Town Clerk and F. G. Dessery, Eng., Los Angeles, Cal.
Illinois.....	Altamont.....	May 1.....	Constrn. sewer system.....	City Council.
California.....	Venice.....	May 1.....	Constrn. sewers; cost, \$15,000.....	G. F. Lewin, City Engr.
Ohio.....	Bellefontaine.....	May 1.....	Constrn. sludge bed, furn. pump.....	F. D. Outland, City Aud.
New Jersey.....	Longport.....	May 9.....	Constrn. sewer system; cost, \$10,000.....	Boro. Council.
<b>WATER SUPPLY</b>				
Illinois.....	Moline.....	Apr. 8.....	Constrn. 9,879 ft. 6 and 8-in. c. i. water pipe, etc.....	L. Payton, City Engr.
Illinois.....	River Forest.....	Apr. 8.....	Constrn. reinforced concrete reservoir.....	J. E. Adams, Village Pres.; Alvord & Burdick, Engrs., Chicago.
Texas.....	Paris.....	Apr. 9, 7.30 p.m.....	Furn. and operating pumping plant for 2 deep wells.....	E. H. McCuistian, Mayor.
Vermont.....	Greensboro.....	Apr. 10.....	Constrn. 11,000 ft. water mains.....	Greensboro Water Co.
Canada.....	Hamilton, Ont.....	Apr. 10.....	Constrn. 22,000 ft. 42-in. steel intake pipe.....	S. H. Kent, City Clk.
Arkansas.....	Berryville.....	Apr. 10, noon.....	Constrn. water works.....	J. R. Neff, Chm. Bd.
Michigan.....	Grand Rapids.....	Apr. 11, 8 p.m.....	Furn. water meters.....	E. H. Christ, Pres. Bd. Pub. Wks.
New York.....	Geneva.....	Apr. 18.....	Constrn. 730 ft. 30-in. c. i. intake pipe.....	Bd. of Pub. Wks.; Wm. S. Johnson, Engr., Boston, Mass.
Missouri.....	St. Louis.....	Apr. 12, noon.....	Furn. two 20,000,000 gal. pumping engines.....	Board Public Imp.
Oklahoma.....	Holdenville.....	Apr. 13.....	Extending water system.....	S. Levan, City Clk.; Goodwin & Harper, Engrs., Kansas City.
Florida.....	Pensacola.....	Apr. 16, noon.....	Constrn. reinforced concrete reservoir.....	D. Kugelman, Chm. Comm.
Nebraska.....	Rosalie.....	Apr. 16.....	Constrn. water works; cost, \$8,700.....	City Clerk; Grant & Letton, Engrs., Lincoln, Neb.
Florida.....	Ft. Pierce.....	Apr. 16, 7 p.m.....	Constrn. water works, 500 tons 6 to 10-in. water pipe, 2 pumps, 75,000-gal tank, 100,000-gal. reservoir.....	Co. Comm.; D. D. & C. M. Rogers, Engrs.
Florida.....	Pensacola.....	April 16, noon.....	Constrn. reinforced concrete reservoir.....	D. Kugelman, Chair. Committee.
Illinois.....	Fairbury.....	Apr. 17.....	Constrn. steel water tank.....	T. D. Karnes, City Clk.
Pennsylvania.....	Hanover.....	Apr. 24, 7 p.m.....	Furn. 50 water plugs and supplying water.....	F. C. Rowe, Sec'y Commrs.
Illinois.....	Altamont.....	May 1.....	Constrn. water works and furn. hydrants, valves, c. i. pipe, pumps, tower and tank.....	City Council.
Florida.....	Titusville.....	May 20.....	Constrn. water works.....	Geo. M. Robbins, Chm. Bond & Trus.
Colorado.....	Aguilar.....	June 1 (about).....	Constrn. water works; cost, \$70,000.....	City Clerk.
<b>LIGHTING AND POWER</b>				
Illinois.....	Alton.....	April 6, 2 p.m.....	Lighting streets with 260 arcs.....	B. R. Kennedy, City Clerk.
Florida.....	Ft. Pierce.....	Apr. 16, 7 p.m.....	Constrn. electric lights.....	Common Council; D. D. & C. M. Rogers, Engrs.
Mississippi.....	Yazoo City.....	Apr. 27, 3 p.m.....	Furn. electrical machinery and apparatus.....	Public Service Commission.
Dist. Columbia.....	Washington.....	Apr. 27, 11 a.m.....	Furn. two 100-kw. motor generator sets.....	Navy Department.
Kansas.....	Topeka.....	May 7, 2 p.m.....	Furn. 50-h.p. engine and generator.....	H. C. Bowman, Chm. State Bd. Con.
Pennsylvania.....	Newcastle.....	May 13, noon.....	Light. streets with arc and incandescent lights.....	F. M. Hartman, City Clk.
<b>FIRE EQUIPMENT</b>				
Ohio.....	Cleveland.....	Apr. 6, noon.....	Install. fire apparatus, etc., in fireboat.....	C. W. Stage, Dir. Pub. Safety.
New York.....	New York.....	Apr. 10, 10.30 a.m.....	Furn. 57,000 ft. 2½-in. fire hose.....	Jos. Johnson, Fire Comm.
Pennsylvania.....	Wilkinsburg.....	Apr. 10, noon.....	Furn. auto combination hose and chemical wagon.....	J. M. Lindsay, Chm. Comm.
Ohio.....	Cleveland.....	Apr. 12, 9.30 a.m.....	Furn. fire hose, etc., for county building.....	County Bldg. Commission.
Dist. Columbia.....	Washington.....	Apr. 15, 2 p.m.....	Furn. 1 gasoline motor car.....	C. H. Rudolph, Pres. Comm.
<b>BRIDGES</b>				
Virginia.....	Bowling Green.....	Apr. 6, noon.....	Constrn. concrete bridge.....	P. St. J. Wilson, State Hwy. Comm.
South Dakota.....	Mitchell.....	Apr. 8, 2 p.m.....	Constrn. bridges during year.....	R. A. Zangle, County Aud.
Maryland.....	Oakland.....	Apr. 8, 1.30 p.m.....	Constrn. iron bridge.....	A. G. Ross, County Clk.
Ohio.....	Youngstown.....	Apr. 8.....	Constrn. steps for bridge.....	County Comm.
Minnesota.....	Winona.....	Apr. 9.....	Constrn. 80-ft. steel truss bridge.....	County Auditor.
Ohio.....	Bowling Green.....	Apr. 9, 1 p.m.....	Constrn. 2 reinforced concrete arch bridges.....	C. E. Stinebaugh, County Aud.
New Jersey.....	Trenton.....	Apr. 9.....	Constrn. concrete foot bridge.....	Board of Freeholders.
California.....	Pasadena.....	Apr. 9.....	Constrn. Arroyo Seco concrete bridge.....	County Supervisors.
Oregon.....	Portland.....	Apr. 10, 10 a.m.....	Constrn. bridge at Troutdale.....	County Commissioners.
Indiana.....	Plymouth.....	Apr. 11.....	Constrn. concrete bridges.....	G. F. McCoy, County Aud.
Pennsylvania.....	Harrisburg.....	Apr. 12.....	Constrn. concrete and stone bridges.....	D. F. Lebo, County Clk.
Ohio.....	Circleville.....	Apr. 15.....	Constrn. sub. and superstructure of bridge.....	J. A. Dodd, County Aud.
Ohio.....	Mt. Gilead.....	Apr. 15, 11 a.m.....	Constrn. concrete arch bridge.....	County Comm.
Illinois.....	Maywood.....	Apr. 15 (about).....	Constrn. concrete bridge; cost, \$35,000.....	Westcott & Ronneberg, Engrs., Chicago.
Pennsylvania.....	Monessen.....	Apr. 15.....	Constrn. reinforced concrete viaduct.....	Boro. Secretary; Chester & Fleming, Engrs., Pittsburgh.
Ohio.....	Hamilton.....	Apr. 17.....	Constrn. bridge; cost, \$9,500.....	County Comm.
New Jersey.....	Paterson.....	Apr. 19.....	Furn. triple comb. auto engine.....	Police and Fire Comm.
Ohio.....	Cleveland.....	Apr. 21, 11 a.m.....	Constrn. concrete arch bridge.....	J. F. Goldenbogen, County Clk.
Ohio.....	Niles.....	Apr. 22, 1 p.m.....	Constrn. steel and concrete bridge.....	F. T. Stone, County Aud.
Nebraska.....	Spring View.....	Apr. 23.....	Constrn. two bridges across river.....	John Scheie, County Clk.
Ohio.....	Cleveland.....	Apr. 24, 11 a.m.....	Constrn. concrete bridge.....	J. F. Goldenbogen, County Clk.
Ohio.....	Cleveland.....	Apr. 27, 11 a.m.....	Constrn. foundation for two piers.....	J. F. Goldenbogen, Clk. Co. Comm.
Nebraska.....	Arlington.....	Apr. 30.....	Constrn. reinforced concrete arch bridge.....	O. T. Anderson, County Clk.
<b>MISCELLANEOUS</b>				
Pennsylvania.....	Pittsburgh.....	Apr. 6, 10 a.m.....	Furn. 3,000 bbls. Portland cement.....	R. J. Cunningham, Co. Compt.
California.....	Santa Clara.....	Apr. 8, 8 p.m.....	Bldg. town hall.....	Town Clerk.
New York.....	Utica.....	Apr. 8, 9 a.m.....	Constrn. 2,400 sq. ft. cement bottom for fountain.....	W. H. Morton, Sec'y Park Bd.
Rhode Island.....	Newport.....	Apr. 8, 5 p.m.....	Constrn. work at Easton's Beach.....	Wm. Shepley, Chm. Comm.
Louisiana.....	Shreveport.....	Apr. 9.....	Constrn. natatorium in park.....	L. H. Baker, Sec'y.
Florida.....	Pensacola.....	Apr. 10, 10 a.m.....	Alter. county jail.....	County Commissioners.
Ohio.....	Youngstown.....	Apr. 10, noon.....	Constrn. 15 voting booths.....	J. V. Murphy, Clk. State Supers.
Canada.....	Hamilton, Ont.....	Apr. 10.....	Furn. 6,500 concrete poles.....	G. H. Lees, Mayor.
Iowa.....	Council Bluffs.....	Apr. 11, noon.....	Bldg. township hall for Garner Township.....	Fred Childs, Chm. Trustees.
Texas.....	Galveston.....	Apr. 11, noon.....	Furn. 1 automobile ambulance, gasoline or electric.....	John D. Kelley, City Sec'y.
Pennsylvania.....	Warren.....	Apr. 12, 2 p.m.....	Constrn. garbage incinerating plant.....	S. W. Waters, Sec'y Trus. Hosp.
Ohio.....	Lorain.....	Apr. 12, noon.....	Dredging in river, 170,000 cu. yds.....	L. B. Johnson, Clk. Dir. Pub. Serv.; C. M. Osborn, Engr.
Dist. Columbia.....	Washington.....	Apr. 13, 11 a.m.....	Furn. garbage crematories at several stations.....	Navy Department.
Kentucky.....	Newport.....	Apr. 15, 11 a.m.....	Constrn. 40-ton garbage incinerating plant.....	J. B. Morlidge, Comm. Pub. Wks.
Georgia.....	Atlanta.....	Apr. 15.....	Constrn. 300-ton incinerator.....	Courtland Winn, Mayor.
Ohio.....	Cincinnati.....	Apr. 16, noon.....	Constrn. water supply, sewerage system electrical equipment, etc., for hospital.....	H. T. Hunt, Pres. Comm.
Canada.....	Moose Jaw, Sask.....	Apr. 17.....	Furn. water tube boilers and accessories.....	A. W. Mayberry, Chm. Comm.
New York.....	Belmont.....	Apr. 22, 10 a.m.....	Constrn. extensions to jail.....	B. B. Ackerman, Board Supers.
Texas.....	Brownsville.....	Apr. 29, 10.30 a.m.....	Bldg. court house and jail.....	County Auditor.
Texas.....	Galveston.....	May 1.....	Constrn. sanitary jail.....	J. M. Church, County Aud.
Cuba.....	Santiago.....	May 6.....	Constrn. 6,400 meters of tramway.....	La Jefatura del Distrito de Oriente.
California.....	San Francisco.....	May 8, 2.30 p.m.....	Furn. & deliver. 43 double end pay-as-you-enter California type motor cars & 4 extra trucks complete with axles, wheels and motors.....	Board Public Works.

## STREET IMPROVEMENTS

**Eutaw, Ala.**—Greene County will vote on \$120,000 bond issue for construction of roads.

**Gadsden, Ala.**—Petition is being circulated for paving of Forest ave., from Sixth to 12th sts.

**Marion, Ala.**—T. D. Kemp, County Surveyor, has made new survey of proposed public road to extend from Watter's store to Dallas County line, to connect with section of Dallas highways, in which distance has been reduced from 10 to nine miles. It is proposed to spent \$12,500 on road and citizens along route offer to donate \$5,000 of it in labor and use of teams. Road will pass through Oakgrove beat.

**Moulton, Ala.**—Lawrence County has voted \$123,000 bond issue for construction of 65 miles of road.

**Oxford, Ala.**—City Council will have meeting for purpose of arranging for sidewalk paving of Main, Choccolocco and Snow sts., and on any other streets that majority of citizens may vote upon.

**Los Angeles, Cal.**—Ordinances of intention for improvement of various streets with estimated time for completion of each have been prepared by City Engineer.

**Waterbury, Conn.**—Mayor Francis T. Reeves favors appropriation of \$50,000 for surface hardening of streets.

**Washington, D. C.**—Plans for improving streets are being discussed.

**Gainesville, Fla.**—City offers for sale \$35,000 street paving bonds. J. E. Webster, Chairman.

**Fort Wayne, Ind.**—Plans have been approved and resolutions confirmed by Board of Works for opening Beaver ave., from Home ave. to Broadway; Howell st., from the first alley east of the Rockhill addition to Custer ave.; Koenig st., from Colerick st. to the first alley north. The Board has under advisement a petition for the opening of Harrison st., from Sixth to Putnam sts.

**Fort Wayne, Ind.**—Resolution has been adopted for widening of Packard ave., from Indiana ave. to Beaver ave.

**Indianapolis, Ind.**—Petition has been filed with County Commissioners asking that new road be built in township between Lafayette pike and Isenhour rd. Petitioners request that county issue bonds for cost of road.

**Indianapolis, Ind.**—Resolutions have been approved for improvement of various streets.

**Richmond, Ind.**—City Engineer has been instructed to draw up plans for construction of sidewalks in Glen, from Main and 24th sts to first springs. Board adopted resolution for improvement of North Fourth st. by construction of cement walks, curbs and gutters on both sides of street.

**Richmond, Ind.**—Resolutions for improvement of North 22d st., from Main to E by construction of cement curb and gutter on east side, bricking of North Seventh st., from Main to A sts., and other improvements have been adopted.

**South Bend, Ind.**—Petitions have been filed for various street improvements.

**Council Bluffs, Ia.**—Opening and paving of First ave. is being discussed.

**St. Joseph, Mo.**—Ordinance for grading of Ashland blvd., from near 28th st. to Lovers' Lane, has been adopted. Besides paving that thoroughfare, sidewalks will be laid for over a mile.

**Elizabeth, N. J.**—Petition is being circulated asking for paving of wings of Westfield ave.

**Haddonfield, N. J.**—Haddonfield Council has accepted bid of M. M. Freeman & Co., of Philadelphia, for \$150,000 bond issue for street improvements, at \$101.20.

**Longport, N. J.**—Longport is preparing to expend approximately \$25,000 for opening and paving of Atlantic ave. through borough. Ordinances providing for improvement of avenue have been introduced in Borough Council.

**Paterson, N. J.**—Request will be made to Board of Works by Board of Trade for installation of "isles of safety," where traffic is so heavy as to embarrass pedestrians. Trade Board will ask that first "isle" be placed at Main and Market sts.

**Rahway, N. J.**—Repairing of Hart st. is being discussed. City Engineer Franklin Marsh will estimate cost of work.

**Albany, N. Y.**—Superintendent C. Gordon Reel has offered resolution at meeting of Highway Commission which was adopted to expend \$380,000, provided by laws of 1911, for construction of portions of State highway running from New York along eastern boundary line of State to Valatie in Columbia County.

**Brooklyn, N. Y.**—Resolutions have been passed authorizing paving with asphalt of large number of streets to cost about \$845,000.

**Brooklyn, N. Y.**—Four resolutions have been adopted by Board of Estimate calling for appropriations for repaving 35 of leading thoroughfares in Queens at cost of \$1,060,680 in addition to other highway repaving previously adopted, total being \$1,600,000.

**Corning, N. Y.**—Bids will be received shortly for improvement of following roads: Road No. 1,000, Big Creek, part 3, 6.95 miles; road No. 5,204, Bath-Avoca, 6.44 miles; road No. 5,224, Campbell-Bath, 8.52 miles; road No. 5,211, Painted Post-Campbell, 8.16 miles; road No. 5,212, Hornell-Canisteo, 3.94 miles.

**Elmira, N. Y.**—Senator Murtaugh's bill providing for bond issue of \$50,000,000 for completion of State highway system has passed Senate.

**Fairport, N. Y.**—Bids have been advertised for construction of road 11 miles in length and will connect this village with Webster, eight miles north, and thence continue to the "Lake" rd. at Nine Mile Point on Lake Ontario. Expense of building road is about \$150,900. Relative proportion of expense will be as follows: State, \$75,450; county, \$52,815; town of Perinton, \$2,777.30; town of Penfield, \$10,494.23; town of Webster, \$9,163.47. The mileage to be built within each town is: Perinton, 1.40; Penfield, 5.29, and Webster, 4.72.

**Lockport, N. Y.**—Common Council has decided to readvertise for bids for cleaning and sprinkling streets of city.

**Middletown, N. Y.**—State Highway Commission will shortly advertise for bids for construction of various sections of route No. 4, one of which runs from Middletown to Bloomingburgh.

**Newburgh, N. Y.**—Petition has been received asking for laying of concrete sidewalk full width on Water and Colden sts.

**New York City, N. Y.**—Board of Estimate has approved of change of grade on Park ave., between 40th and 42d sts., to provide for viaduct to connect Park ave. at 40th st. with proposed elevated roadway on northern side of 42d st., which will pass around Grand Central Station.

**Niagara Falls, N. Y.**—Sixty-nine miles of good roads will be built in Niagara County this year, part of which will be section of Buffalo and Niagara Falls blvd. Bids for 350 miles of good roads are to be received at Albany next month.

**Niagara Falls, N. Y.**—Board of Public Works asked Board of Estimate and Apportionment for authority to install asphalt pavement repair plant at cost of \$3,500 without formality of calling for bids.

**Poughkeepsie, N. Y.**—Clerk has been ordered to advertise for bids for laying brick pavements on Church st., from Union Square to Grand st., South Bridge, Main to Church st., North Bridge, Main to Mill st., Cherry St., Main to Church st.

**Pulaski, N. Y.**—Board of Village Trustees has discussed issuing of bonds for \$15,000 preliminary to paving with brick of business section, proposition to raise that amount having been carried at recent charter election. It was decided to advertise for bids for issue of bonds.

**Rome, N. Y.**—Special meeting of Board of Public Works has been held at which

## Creston, Ia.—Bids received as follows:

Bidder and address.	Bituminous concrete, 50,000 yds.	Bitulithic, 50,000 yds.	Brick with sand filler, 50,000 yds.	Brick with pitch filler, 50,000 yds.	Brick block with sand filler, 50,000 yds.	Brick block with pitch filler, 50,000 yds.	Concrete alley paving, 2,000 yds.	Extra for 5-in. base instead of 4-in., 3,700 yds.
J. S. McLaughlin & Sons, Red Oak, Ia.	\$1.50	.....	\$1.78	\$1.93	\$1.77	\$1.91	\$1.12	\$0.12
*Western Imp. Co., Racine Wis.	1.48*	.....	.....	.....	.....	.....	1.10*	*.12½
D. W. Wright & Co., Bedford, Iowa	1.63	.....	.....	.....	1.81	1.96	1.25	.10
Wm. Horrabin, Iowa City, Iowa	1.54½	1.84½	1.86	2.02	1.86	2.02	1.14	.10
G. Mancini, Florence, Neb.	.....	.....	.....	.....	1.85	2.00	1.14	.12
Kaw Paving Co., Topeka, Kan.	1.58	.....	.....	.....	1.85	1.95	1.12	.13
M. Ford, Cedar Rapids, Iowa	1.52	.....	.....	.....	1.78	1.90	1.20	.11
J. C. Blunk, Ottumwa, Iowa	.....	.....	1.75	1.92	1.74	1.87	1.22	.11
National Roofing Co., Omaha, Neb.	1.68	.....	1.88	1.97	1.88	1.97	1.10	.12
Myers Const'n Co., St. Louis, Mo.	1.73	.....	.....	.....	.....	.....	1.33	.23
Dunnegan & Hamilton, Shenandoah, Ia.	1.59	1.98	1.76	.....	1.76	.....	1.25	.....
Eureka Paving Co., Omaha, Neb.	1.59	1.69	1.94	2.09	1.94	2.09	1.10	.12

Successful bidder and bids indicated by star (\*). Prices given are per square yard.

**Orlando, Fla.**—City Council has ordered brick for paving street, and passed resolution ordering cement block sidewalks on North Orange ave., from corner of Livingston ave., where paving and walks now stop, to stand pipe of city water works on north limits of city. This will make continuous walk and paved street from Lake Lucerne to stand pipe.

**Tampa, Fla.**—Resolution has been adopted for paving of Palm ave., from Tampa st. to Nebraska ave.

**Tampa, Fla.**—Paving of Florida ave. with asphalt block is recommended.

**Atlanta, Ga.**—Street Committee of City Council is considering petition for opening of Williams st., from Cain to James and closing of west end of James st.

**Atlanta, Ga.**—Bond issue of \$2,000,000 for street improvements is being discussed.

**Dalton, Ga.**—Petitions asking Board of Roads and Revenue to issue call for election for not less than \$250,000 of bonds for road improvement are being printed and will be thoroughly circulated over county.

**Rome, Ga.**—Opening of Fifth ave. is being considered.

**E. St. Louis, Ill.**—Board of Local Improvements has ordered improvement of Linden ave., from easterly line of 30th st. to westerly line of 38th st. Estimated cost was given at \$14,942. This will give street from Lansdowne to East Lansdowne. Public hearing will be held on April 12.

**Ottawa, Ill.**—Plans for paving city streets are being discussed.

**Evansville, Ind.**—Petitions for improvement of Eighth st., from Division to Pennsylvania st. and for paving alley from Heidelberg ave. to Lafayette st., have been received by Board and referred to City Engineer.

**Muncie, Ind.**—City Engineer Deardorf has filed his estimate on proposed improvement of Washington st., from bridge to High st., with Board of Works. Estimate is given as \$8,868.14.

**Hickman, Ky.**—City is contemplating \$15,000 bond issue for street paving.

**Lexington, Ky.**—Residents of Mentelle Park are circulating petition calling upon Mayor and General Council to take up reconstruction of park's roadways on 10-year plan, majority of signers so far favoring asphalt, either sheet or block.

**Lexington, Ky.**—Construction of new streets to cost \$100,000 is being recommended.

**Louisville, Ky.**—Orainances have been passed for improvement of various streets and sidewalks.

**Morgan City, La.**—City Council has let contract to lay 23,000 sq. ft. of additional sidewalk along Railroad ave. and Everett st.

**New Orleans, La.**—Paving of Frenchmen and Claiborne aves. is being discussed.

**Lowell, Mass.**—Petition for widening of Decatur st. will be considered.

**South Hadley Falls, Mass.**—Sum of \$10,000 will be expended in paving Bridge st.

**Chippewa, Mich.**—Township will vote April 1 on proposition to bond for \$4,000 to improve east line road, continuation of Broadway st., from Mt. Pleasant.

**Eaton Rapids, Mich.**—At election April 1, Clarence Township will vote on proposition to bond for \$20,000 to be expended in construction of 12 miles of State roadway.

**Houghton, Mich.**—Chairman McLain, of County Road Commission, states that bids for construction of Houghton-Atlantic, Snake River, Baraga and Hancock-Calumet rds., have been rejected by Commission.

**Cloquet, Minn.**—Construction of road from Cloquet to Indian Village northwest of city, is being considered.

**Carthage, Mo.**—City Council has ordered Street Commissioner to advertise for bids for paving of Fourth st., from Lyon st. to Howard st., as per specifications.



was decided to ask State Engineering Department to provide duck pavement in roadways of new State bridges which are to span barge canal in South James and Lawrence sts.

**Saranac Lake, N. Y.**—County Treasurer B. L. Reynolds has sold \$33,000 of Franklin County highway bonds to Curtis & Sanger, of 39 Wall st., New York City.

**Dayton, O.**—Extension of Norwood ave., from Mound st. to Williams st., is being considered. T. F. Sinks, L. M. Barr and Fred Haber, Road Viewers, have recommended to County Commissioners that proposed Shock rd. in Randolph Township be built as petitioned for by township residents. New county road, as planned, will connect Kennedy and Kimmel rds.

**Salem, O.**—Improvement of Sugar Tree alley, between E. L. Worth ave. and North Howard st., is being considered.

**Springfield, O.**—Bonds in sum of \$4,622.80 will be sold on April 9 for proposed Summit ave. improvements.

**Springfield, O.**—Petition by property owners abutting on North Limestone st., between McCreight ave. and Grube rd., for improvements by paving with brick or asphalt, has been referred to Street Committee.

**Springfield, O.**—Petition has been received by County Commissioners and agreement reached between Trustees of Jackson Township and Commissioners for repair of piece of road south of St. Paris, beginning at place where 1910 improvement ended, about one mile south of St. Paris corporation line.

**Portland, Ore.**—Extensive repairs have been ordered by County Commissioners on Humphrey blvd., crooked little road extending along north side of Mount Zion, between Sylvan and Mount Zion schoolhouse.

**Dunmore, Pa.**—Council has sold paving bond issue of \$45,000.

**Erie, Pa.**—City's cost of improving State st., from Second st. to State canal basins, is estimated at \$28,060, in report of City Engineer B. E. Briggs to Councils. Plans show street is to be paved 54 ft. in width, with sidewalks 20 ft. wide. The high banks at the Hamet Hospital will be cut down and concrete retaining walls constructed. Cost of these walls is given at \$4,200. Northward where street reaches water, cribs will be constructed on each side, costing \$5,300. Filling for street is placed at \$2,200, but engineer says this estimate will be decreased if sand dredged by State Commission can be used. Resetting curbs and sides will cost \$2,550; conduits for electrical wires, \$1,700; Tungsten ornamental street lights, \$1,800. Paving is estimated at \$7,000.

**Erie, Pa.**—Bids for paving East ave., from Fifth st. northwardly to Queen st., have been rejected. They averaged more than \$1.64 a sq. yd. for asphalt and brick. Bidding included following on Class B asphalt with brick gutters: J. & M. Doyle, \$1.10 with base at 60 cts. a yard and curbing at 40 cts. a ft.; Mayer Bros. Construction Co., \$1.10 with base at 57 cts., and John McCormick & Son, \$1.09 with base at 55 cts. On Bessemer block the price of Mayer Bros. was \$1.10 with base at 50 cts., and of McCormick's, at \$1.15 with base at 49 cts. Curbing by McCormick's was quoted at 39 cts. a foot.

**New London, Pa.**—It is estimated that it will cost \$1,200 to \$1,500 to repair roads in New London Township, owing to damage done by recent rains.

**Pittsburgh, Pa.**—Bids for work of grading in connection with cutting down of "Hump" were opened on March 25 but no award has been made owing chiefly to fact that new suit has been entered by non-resident property owner asking for injunction. Bids opened were as follows: M. O. Heerpr Co., \$638,000; James H. McQuade Co., \$640,532; Booth & Flinn, \$660,000; John F. Casey, \$674,000.

**Scranton, Pa.**—Ordinances are being considered for paving and sewerage of Albright ave., between Green Ridge st. and North Main ave.

**Pawtucket, R. I.**—Issuance of bonds will be considered for construction of highways.

**Athens, Tenn.**—Paving of streets and sidewalks has been authorized, to cost \$15,000.

**Chattanooga, Tenn.**—Sum of \$10,000 will be expended on road work.

**Greenback, Tenn.**—Work of surveying for pike roads will shortly be completed in Blount fraction of Loudon County, other parts of county having nearly all been surveyed. With coming of spring work of building the roads will begin.

**Nashville, Tenn.**—Voters of Robertson County have voted in favor of \$300,000 bond issue for good roads.

**Nashville, Tenn.**—Councilman E. A. Glennon, of Eighth Ward, is having drawn up two bills under new street im-

provement ordinance for paving of Johnson ave., from Ninth to 20th aves., and Cedar st., from 12th, 14th and 16th aves., from Cedar st. to railroad crossing, with bitulithic.

**El Paso, Tex.**—Ordinance has been adopted ordering improvement of Montana st., from Cotton ave. to Piedras st. City Engineer Herbert Nunn has reported cost of paving will be \$36,793.96, of which \$8,137.06 would be paid by the city; \$271.35 by the street railway company; \$344.18 by the steam railway companies and \$28,041.37 by property owners.

**Jourdanton, Tex.**—Movement is on foot to secure direct road to Poteet along line of railroad.

**Nacogdoches, Tex.**—In bond election held to vote bonds for street paving, sewerage and electric light plant, propositions carried by large majority.

**San Angelo, Tex.**—City of San Angelo soon will issue call for bids for \$50,000 in street bonds, which have been approved by voters.

**San Antonio, Tex.**—Ordinance has been passed appropriating \$662.51 for construction of sidewalks, curbing and fence on north side of Travis st.

**Middlebury, Vt.**—City has planned construction of roads to cost about \$5,000.

**Alexandria, Va.**—Resolution is being considered providing for bond issue of \$100,000 for street improvements, which it proposes shall be voted on April 23.

**Culpeper, Va.**—Judge Geo. S. Shackelford, of Circuit Court, has issued order for election on April 20 for purpose of bonding Catalpa District of Culpeper County for \$120,000 for macadam roads in district and on streets of Culpeper.

**Boston, Mass.**—To Jeremiah J. Sullivan for repairing artificial stone sidewalks on any street within city limits. Bids on this work were opened March 18, as follows:

	1	2	3	4	5	6	7
	Less Than 20 Square Feet, Each Job.	20 and Less Than 100 Square Feet. (Per Square Foot.)	100 and Less Than 300 Square Feet. (Per Square Foot.)	300 and Less Than 500 Square Feet. (Per Square Foot.)	500 and Less Than 700 Square Feet. (Per Square Foot.)	700 and Less Than 900 Square Feet. (Per Square Foot.)	900 Square Feet, and Over.
Jeremiah J. Sullivan.....	\$3.00	\$0.18	\$0.17	\$0.13	\$0.12	\$0.12	\$0.12
Robert Eagar, Jr.....	4.00	16	16	15	14	14	13 1-2
C. W. Dolloff & Co.....	4.50	22	17	16	14	13	12
W. A. Murfieldt Co.....	5.00	21 1-2	01-7 21	01-8 21	01-9 21	3-1 91	01-8 21
Simpson Bros. Corporation..	6.00	22	19	17 1-2	17	15	15
D. M. Biggs & Co.....	6.50	22	17 9-10	17 1-2	17	16 1-2	16
Warren Bros. Co.....	7.00	25	16 9-10	14 7-10	14 7-10	14 7-10	14 7-10
John Landis .....	8.00	30	16	15	13	12	12

**Fredericksburg, Va.**—Issue of \$20,000 road bonds has been sold to banking firm in Toledo, O.

**Richmond, Va.**—City Engineer has been directed to proceed at once with grading of Washington Park, and to expend in work sum not exceeding \$500, to be taken from park appropriation fund.

**Richmond, Va.**—Smooth pavement on Grove ave. for some distance west of Lombardy st. has been approved by Board of Aldermen on recommendation of Committee on Finance, appropriation carrying \$25,000 for laying asphalt block similar to that on Grace, Franklin and other residential streets.

**Hillyard, Wash.**—Question of securing macadamized highway running from Hillyard to Spokane and from Hillyard north to Mead rd., is being considered.

**Montesano, Wash.**—At last session of City Council it was decided to pave Pioneer st., from River to Academy, distance of approximately 1,500 ft. Cement curbs and sidewalks will be laid. Pioneer will have on completion of this work paved length of nearly 2,500 ft.

**Wheeling, W. Va.**—Estimates prepared by City Engineer Cooke on improvement of city streets have been taken up by Board of Control and tentative plans for street improvements were outlined. Main st., from 12th to creek bridge will be asphalted, and then Market st., from 11th st. to creek bridge. Then McColloch st., from 16th to Baker sts., and then Main st., from creek bridge south to 27th st.

**Neenah, Wis.**—Construction of macadam road seven miles in length is being discussed.

#### CONTRACTS AWARDED

**Los Angeles, Cal.**—By City, for paving projects, as follows: For improving Hamlet st., between York blvd. and Eagle Rock ave., to D. D. Chapman, at \$10,988, and for improving Olive ave., from Vine st. to Cole ave., to E. A. Baker, at \$12,454.

**Los Angeles, Cal.**—To McCarty Co., of Los Angeles, for macadamizing Wilton pl. and Temple st., to Arthur W. Howard, 1540 Wilton pl., for \$15,260; for improving portion of Bellevue ave., to John Radich, for about \$22,857, and C. H. Ellison, of Los Angeles, is stated to have secured contract for improving portion of Robinson st., at \$7,232.

**Pasadena, Cal.**—For street improvements, as follows: Improving El Molino ave., J. C. Kinsman, \$16,784, and Mountain ave., \$5,260.70; Meredith and Garfield aves., J. E. Haddock, \$3,235.96 and \$9,290.84; Curtis st., Cox & Mathews, \$3,988.62; Wilson ave., W. A. Dontanville, \$584.39.

**Venice, Cal.**—For paving and curbing Westminster ave., from Electric ave. east to city limits, to Bryant, Braun & Austin, at \$45,000.

**Jacksonville, Fla.**—By County Commissioners, for grubbing and clearing Lake Snore blvd., from Morgan's Mill for distance of 1 1/4 miles, to Sam Spencer, at \$35 per acre, and for grading same avenue, per acre, 18 cts. per cu. yd.

**Kissimmee, Fla.**—By City, to Alabama Paving Co., Birmingham, Ala., for four miles of additional street paving, to cost about \$70,000.

**Tampa, Fla.**—By Board of Public Works, to Georgia Engineering Co., Augusta, Ga., to pave Seventh and Florida aves. and Willow, Nebraska and Ruby sts.

**Pana, Ill.**—For paving W. Second, W. Third, S. Cedar, S. Locust, E. Main, S. Oak, Congress st. and Commercial alleys, to John Cherry, of Jacksonville, for \$69,497.

**Columbia City, Ind.**—For paving State, Front, Water and other streets, to W. W. Hatch & Son, of Goshen, for \$30,726.

**Seymour, Ind.**—By City Council, to DeGolyer & Smith, for five blocks of concrete paving in N. Chestnut st.

**Shelbyville, Ind.**—By Board of Shelby County Commissioners, to William Avery, Waldron, Ind., for construction of two stone roads.

**Cedar Falls, Ia.**—For 31,000 sq. yds. concrete paving, to McCarthy Improvement Co., of Davenport, at 92 cts. per sq. yd.

**Creston, Iowa**—By City, for 45,000 ft. of combined curb and gutter, to J. S. McLaughlin & Sons, Red Oak, Iowa, at 53 cts. per ft. Other bids as follows: Western Improvement Co., Racine, Wis., at 66 cts. per ft.; D. W. Wright & Co., Bedford, Ia., at 68 cts. per ft.; Wm. Horrab, Iowa City, Ia., at 69 cts. per ft.; G. Mancini, Florence, Neb., at 62 cts. per ft.; E. Kenney & Son, Creston, Ia., 73 cts. per ft.; Kaw Paving Co., Topeka, Kan., at 66 1/2 cts. per ft.; Rutledge & Co., Creston, Ia., 68 cts. per ft.; Lytton-Reinking Construction Co., Des Moines, Ia., at 66 per ft.; Horton Bros, Red Oak, Ia., at 70 cts. per ft.; Akin & Flutter, Corning, Ia., at 59 cts. per ft.; Decorah Cement Sidewalk Co., Decorah, Iowa, at 69 cts. per ft.; Dunnegan & Hamilton, Shenandoah, Ia., at 64 cts. per ft.; Fred W. Guenther, Burlington, Ia., at 66 cts. per ft.; Eureka Paving Co., Omaha, Neb., at 62 cts. per ft.

**Creston, Ia.**—By City Council, for nearly five miles of new paving, to Western Improvement Co., of Racine, Wis., for 50,000 sq. yds. of bituminous concrete paving, at \$1.48 per sq. yd. Curbing and gutter work was awarded to McLaughlin & Sons, of Red Oak, at 53 cts. per lin. ft.

**Waterloo, Ia.**—By City Council, to Bryant Asphalt Paving Co., for paving Commercial st. and part of Fifth st., amounting to 100 ft.; also for paving

Fourth st., from Bluff to Washington st. Bids were as follows for paving of Commercial st.: Asphalt laid, per sq. yd., \$2.20; overhaul, per cu. yd., 2 cts.; resetting old curbs, per lin. yd., 20 cts.; building new curbs, per lin. ft., 44 cts.; building Portland cement curbs with angle iron edge, per lin. ft., \$1. The bid of the same company for Fourth st., from Bluff to Washington st., was as follows: Sheet asphaltum, per sq. yd., \$2.12; overhaul, per cu. yd. per hundred feet, 2 cts.; resetting old curbs, per lin. yd., 20 cts.; setting new Portland cement curbs, per lin. ft., 20 cts.; with angle iron, \$1; paving within railway tracks, per sq. yd., \$3.

**Fall River, Mass.**—For street car sprinkling, to American Street Car Sprinkling Co., of Worcester, at \$8,799.38 per season.

**Benton Harbor, Mich.**—To Harry Vanderveen, 142 Second st., Grand Rapids, at \$18,513.50, for paving W. Main st.

**Lowell, Mich.**—To Jas. A. McKay, Clare, Mich., at \$19,170.25, for paving with brick Main and Bridge sts., at Lowell.

**St. Clemens, Mich.**—By Common Council, for paving North Gratiot ave. with Nelsonville brick, to W. W. Hatch & Son Co., of Detroit.

**Columbia, Mo.**—For paving, as follows: To Columbia Paving Co., of Columbia: 7,505 cu. yds. excavation, 37 cts.; 1,819 cu. yds. embankment, 8 cts.; 19,819 sq. yds. preparing subgrade, 8 cts.; 8,798 ft. 6 x 16 in. concrete curb, 35 cts.; 19,819 sq. yds. 1:3:5 concrete foundation 4 in. thick, 38 cts.; 19,819 sq. yds. brick paving on 2-in. sand cushion, \$1, and 19,819 sq. yds. cement grout fill, 10 cts.; total, \$37,176. To J. A. Stewart, of Columbia: 2,685 cu. yds. excavation, 40 cts.; 4,047 cu. yds. embankment, 10 cts.; 5,429 cu. yds. preparing subgrade, 10 cts.; 4,100 ft. 6 x 16 in. curbing, 36 cts., and 5,429 sq. yds. concrete base, cushion, brick and grout fill, \$1.45; total, \$11,332.

**Kansas City, Mo.**—For paving Chelsea ave. and Filmore st., to A. Jaicks & Co., 13th and Elmwood sts., for \$5,779.

**St. Louis, Mo.**—For excavating and grading 350,000 cu. yds. of land west of Forest Park, to Cameron, McManus & Joyce, at 16 cts. per cu. yd.

**Chinook, Mont.**—By Town Council, for grading, constructing cement walks, curbing and ornamental lamp posts, to Two Miracle Co., of Kalispell, for \$68,000.

**Paterson, N. J.**—By Board of Freeholders, for improvement of River rd., to George F. Brackett, at \$40,000.

**Newburgh, N. Y.**—To Geiser Mfg. Co., of Trenton, N. J., for road roller for Newburgh.

**New York, N. Y.**—For regulating and repaving with sheet asphalt, in all 152,840 sq. yds., on portions of Division, Attorney, Orchard, Willett, Gouverneur, Stuyvesant, Hester, Rutgers, Elizabeth sts., E. Second, Third, Fourth, Seventh, Eighth, 10th, 32d, 45th, 47th, 53d, 56th, 59th, 65th sts., W. 21st, 41st, 43d, 47th, 49th, 50th, 96th, 106th sts., in all 30 contracts, to Sicilian Asphalt Paving Co., 41 Park Row, for 29 streets and Warner-Quinlan Asphalt Co. secured contract for one street. Bid of Warner-Quinlan Asphalt Co., 79 Wall st., successful bidder for paving 59th st., from west side of Madison ave. to east side Fifth ave. and from west curbline of Sixth ave. to east side Columbus Circle, is as follows: 4,880 sq. yds. of asphalt pavement, including binder course, except the railway area, \$1.52; 660 sq. yds. of asphalt pavement, including binder course, in railroad area (no guarantee), \$1.52; 970 cu. yds. of Portland cement concrete, \$5.60; 500 lin. ft. of new 7-in. bluestone, Medina sandstone or granite curbstone, \$1.20; 450 lin. ft. new 5-in. bluestone or Medina sandstone curb, \$1.09; 18 standard heads and covers, complete, for sewer manholes, furnished and set, each, \$15; total, including contract extras, \$15,212. Following are totals of bids on all 29 streets for which Sicilian Asphalt Co. secured contracts: Division st., \$17,858; Attorney st., \$10,168; Orchard st., \$26,390; Willett st., \$16,205; Gouverneur st., \$13,069; Stuyvesant st., \$10,325; Hester st., \$20,167; Rutgers st., \$2,744; Elizabeth st., \$16,051; Second st., \$18,093; Third st., \$38,010; Fourth st., \$40,916; Seventh st., \$28,996; Eighth st., \$20,273; 10th st., \$24,232; 21st st., \$16,800; 32d st., \$4,633; 41st st., \$14,224; 43d st., \$8,507; 45th st., \$18,221; 47th st., from First ave. to Third ave., \$13,861; 47th st., from Sixth ave. to Seventh ave., \$8,611; 49th st., \$8,736; 50th st., \$6,683; 53d st., \$22,842; 56th st., \$8,066; 65th st., \$7,835; 96th st., \$21,593; 106th st., \$33,305. Unit prices on few of contracts of Sicilian Asphalt Co. for paving work opened on March 25, as stated above, are as follows: Fourth st., 12,630 sq. yds. asphalt pavement, including binder course, \$1.49; 2,480 cu. yds. Portland cement concrete, \$5.50;

7,350 lin. ft. new 5-in. bluestone or Medina sandstone curb, furnished and set, each, \$1.05; 200 lin. ft. old bluestone curb reset, each 50 cts.; 40 standard heads and covers, complete, for sewer manholes, each \$16. Seventh st., 9,120 sq. yds. asphalt pavement, including binder course, \$1.45; 1,790 cu. yds. Portland cement concrete, \$5.50; 5,230 lin. ft. new 5-in. bluestone or Medina sandstone curb, \$1.05; 200 lin. ft. old bluestone curb reset, 50 cts.; 21 standard heads and covers, complete, for sewer manholes, furnished and set, each, \$16. Tenth st., 6,170 sq. yds. asphalt pavement, including binder course, except the railway area, \$1.60; 620 sq. yds. asphalt pavement, including binder course, in the railroad area (no guarantee), \$1.60; 1,400 cu. yds. Portland cement concrete, \$5.50; 5,070 lin. ft. new 5-in. bluestone and Medina sandstone curb, \$1; 300 lin. ft. old bluestone curbstone redressed, rejoined and reset, 50 cts.; 28 standard heads and covers, complete, for sewer manholes, each, \$16. Fifty-third st., 7,290 sq. yds. asphalt pavement, including binder course, \$1.44; 1,430 cu. yds. Portland cement concrete, \$5.50; 4,100 lin. ft. new 5-in. bluestone or Medina sandstone curb, \$1; 150 lin. ft. old bluestone curb reset, 50 cts.; 19 standard heads and covers, complete, for sewer manholes, each, \$16. Ninety-sixth st., 8,800 sq. yds. asphalt pavement, including binder course, \$1.40; 1,080 cu. yds. Portland cement concrete, \$5.50; 3,140 lin. ft. new 7-in. bluestone, Medina sandstone or granite curb, \$1.20; 18 standard heads and covers, complete, for sewer manholes, each, \$15.

**Rochester, N. Y.**—By Board of Contract & Supply, for paving as follows: Lark st., with asphalt, Rochester Vulcanite Paving Co., of Rochester, \$15,776; Whitmore, Rauber & Vicinus, 279 South ave., Seneca Parkway, with asphalt, \$35,114, and Julius Friederich Co., with asphalt, on St. Paul st., at \$67,629.

**Syracuse, N. Y.**—By Board of Contract & Supply, to Warner Quinlan Co., at \$1.12 per sq. yd., contract for repairing asphalt pavements of city. Estimated cost of work this year is \$28,755.

**Caldwell, O.**—By Board of County Commissioners, to Wilson & Harper, for construction of Coombs rd.

**Canton, O.**—For constructing 1½ miles of brick pavement on Massillon-Mullersburg rd., by County Commissioners, to Wiban & Clements, Massillon, O., at \$23,870.

**Cincinnati, O.**—By Board of County Commissioners, for improvement of Round Bottom rd., to John Ruebel Construction Co., at \$8,189.

**Cincinnati, O.**—By Director of Public Service, to Kirschner Construction Co., at \$10,214, for paving Powers st., from Sylvan to Fisher sts., with macadam and brick.

**London, O.**—By City Council, for paving E. First st., to Jerry Neville, for \$12,393.

**Toledo, O.**—By Board of Control, for paving as follows: Carpenter & Anderson, sheet asphalt, Michigan, Collingwood and Grand aves., at \$22,739; Asphalt Paving Block Co., with asphalt block, Nessle st., \$15,983; H. P. Streicher, sheet asphalt, Waite ave., \$11,987; Henry Sheehan & Son, 1208 Collingwood st., with Metropolitan block, Hoag st., \$17,506, and Ewing st., \$6,894; Peters Bros., with vitrified block on Delaware ave., \$14,227, and to P. Waters, with vitrified block, on Utah st., at \$7,174.

**Steubenville, O.**—By Unionport & Smithfield Pike Commissioners, for construction of pike, to Wolf & Frowine, at \$18,415.30. Other bids were: A. W. McDonald, \$22,316.44; Liggett Bros., \$20,778.13.

**Greenville, S. C.**—By Street Committee of City Council, to West Construction Co., for paving of Augusta streets with sheet asphalt. The contract price was \$25,000. Bond issue election will be called in few weeks for issuance of \$150,000 in bonds for completion of all streets in city.

**Newberry, S. C.**—By City, to A. E. Lagare, Columbia, S. C., to pave Main st., from depot to College st., including public square; 5,000 sq. yds. paving. J. R. Scurry is City Clerk.

**Beaumont, Tex.**—By City, to Uvalde Rock Asphalt Co., Uvalde, Tex., to pave 37 blocks, or about 31,000 sq. yds., of street with rock asphalt; width of street, 27 ft.; cost, \$60,000; and to Creosoted Wood Block Paving Co., of New Orleans, La., for 24 blocks, or about 33,000 sq. yds., of street with creosoted wooden blocks; width, 40 ft.; cost, \$70,000.

**Beaumont, Tex.**—By City Council, for 93,000 sq. yds. paving, to J. B. Smyth, of Beaumont, for about 37 blocks with asphalt, at \$1.75, and 50 cts. per lin. ft. for curb; and to Creosoted Wood Block Pav-

ing Co., of New Orleans, La., for 24 blocks of wood block, at \$2.30 per sq. yd. and 45 cts. per lin. ft. for curb.

**Richmond, Va.**—By City, to T. J. Smith & Co., for certain repair work in Street Department.

**Anacortes, Wash.**—By City Council, to George A. Dietrich & Co., Seattle, at \$19,989, for improvement of Commercial ave., between 11th and 15th sts.

**Shelton, Wash.**—By Board of County Commissioners of Mason County, to W. G. Rex, Shelton, at \$6,825, for constructing one mile of road, including clearing, grading and rolling.

**Spokane, Wash.**—By City Commissioners, for paving Eighth ave., from Cannon to Chestnut sts., with granitoid concrete, to Mitchell Bros., at \$3,190.

**Spokane, Wash.**—For paving portion of Seventh ave. with bitu-mass, to Spokane Bitu-Mass Co., for \$7,870.

**Spokane, Wash.**—For building great Apple Way, from east limits of Spokane to Spokane bridge, distance of 14.66 miles, by County Commissioners, to Spokane Paving & Construction Co. Cost is estimated by C. L. Graves, County Engineer, was \$47,356.40. Next lowest bid was by Mitchell Bros., \$44,560. Other bidders were G. A. Carlson, John F. Costello, O. H. Stratton and J. O. Hoag.

**Tacoma, Wash.**—To Keasel Construction Co., for paving Cedar st., from N. 15th to N. 21st st., with sheet asphalt, for \$11,800.

**Beloit, Wis.**—For construction of 5,000 yds. of pitch filler, by City Council, to George Welch, at \$6,900.

**Neenah, Wis.**—By Board of Public Works, for grading and paving Wisconsin ave., to Chris Johnson, Oshkosh, Wis., at \$24,274.74, for tar macadam; \$43,922.09, for creosoted block, and \$26,013.48 for asphaltic concrete.

**Two Rivers, Wis.**—By Board of Public Works, for paving about 25 blocks, to Schuette Cement Construction Co., Manitowoc, Wis., at \$30,000.

**Welland, Ont.**—By Town Council, to C. H. Kaumeln, Port Huron, for paving of Main and Muir sts., at \$109,893. Material will be No. 1 Metropolitan brick.

#### BIDS RECEIVED

**Fort Wayne, Ind.**—For paving of portions of 11 city streets, as follows: Butler st., from Clinton to Lafayette st.; Barber Asphalt Co. bid \$7.91 per lin. ft. on sheet asphalt and \$7.56 on anchored bituminous concrete; the Brooks Construction Co., \$8.19 on Bessemer brick block and \$8.26 on Metropolitan block; the Grace Construction Co., \$7.80 on sheet asphalt, \$7.44 on anchored concrete and \$8.20 on Bessemer block; the Moellering Construction Co., \$7.89 on Metropolitan block, and H. P. Streicher, \$8.15 on sheet asphalt. Board entered preliminary order for asphalt, making Grace company as lowest bidder. Engineer's estimate on this contract is \$7,150.78. Kinnaird ave., from Fairfield ave. to Broadway: Barber Asphalt Co., \$7.15 per lin. ft. for asphalt and \$6.83 for anchored concrete; the Grace Construction Co., \$7.02 for asphalt, \$6.70 for anchored concrete and \$7.35 for Bessemer block; Moellering Construction Co., \$7.14 for Metropolitan block; Saxon & Co., \$6.65 for asphalt, and H. P. Streicher, \$7.25 for asphalt. Preliminary order is for anchored concrete, with Grace company low. Estimate is \$10,993.89. Walnut st., from Fairfield ave. to Miner st.: Barber Asphalt Co., \$6.94 per lin. ft. for asphalt and \$6.61 for anchored concrete; the Brooks Construction Co., \$6.80 for Bessemer block and \$6.86 for Metropolitan block; Grace Construction Co., \$6.75 for asphalt, \$6.43 for anchored concrete and \$7.08 for Bessemer block; Moellering Construction Co., \$6.86 for Metropolitan block; Saxon & Co., \$6.46 for asphalt; H. P. Streicher, \$7.25 for asphalt. Asphalt was chosen as the material. The estimate is \$32,426.33. South Wayne ave., from Creighton to Organ ave.: Barber Asphalt Co., \$1.82 per sq. yd. for asphalt and \$1.70 for anchored concrete for surfacing material only; Brooks Construction Co., \$1.83½ for Bessemer block, \$1.85½ for Metropolitan block; Grace Construction Co., \$1.74 for asphalt, \$1.62 for anchored concrete and \$1.85 for Bessemer block; Moellering Construction Co., \$1.78 for Metropolitan block. Asphalt was selected. The estimate is \$14,609.48. Harrison st., from the alley south of Grand st. to Butler st.: Barber Asphalt Co., \$9.35 for asphalt and \$8.92 for anchored concrete; Brooks Construction Co., \$9.51 for Bessemer block and \$9.59 for Metropolitan block; Grace Construction Co., \$9.20 for asphalt, \$8.79 for anchored concrete and \$9.62 for Bessemer block; Moellering Construction Co., \$9.19 for Metropolitan block; Saxon & Co., \$8.59 for asphalt, and H. P. Streicher, \$9.60 for asphalt. Asphalt was ordered. The es-



imate is \$14,177.51. Fourth st., from Calhoun to Clinton st.: Barber Asphalt Co., \$6.75 per lin. ft. for asphalt and \$6.74 for anchored concrete; Brooks Construction Co., \$6.54 for Bessemer block and \$6.50 for Metropolitan block; Grace Construction Co., \$6.68 for asphalt, \$6.37 for concrete and \$7 for Bessemer block; Moellering Construction Co., \$6.54 for Metropolitan block. Vitrified shale brick was ordered. The estimate is \$880.50. Maumee ave., from Walton ave. to Warren st.: Barber Asphalt Co., \$1.82 per sq. yd. for asphalt and \$1.70 for anchored concrete, paving material only; Brooks Construction Co., \$1.76½ for Bessemer block and \$1.78½ for Metropolitan block; Grace Construction Co., \$1.74 for asphalt, \$1.63 for anchored concrete and \$1.85 for Bessemer block; Moellering Construction Co., \$1.80 for Metropolitan block; H. P. Streicher, \$1.95 for asphalt. Vitrified brick block was chosen. The estimate is \$3,114.25. Lake ave., from Crescent to Walnut ave.: Barber Asphalt Co., \$8.33 per lin. ft. for asphalt and \$7.94 for anchored concrete; Grace Construction Co., \$5.48 for asphalt, \$7.73 for anchored concrete and \$8.52 for Bessemer block; Moellering Construction Co., \$7.98 for Metropolitan block; Saxon & Co., \$7.64 for asphalt, and H. P. Streicher, \$8.40 for asphalt. Anchored concrete was ordered. The estimate is \$4,813.04. Maiden lane, from Main to Pearl st.: Barber Asphalt Co., \$5.70 per lin. ft. for asphalt and \$5.46 for anchored concrete; Brooks Construction Co., \$5.51 for Bessemer block and \$5.61 for Metropolitan block; Grace Construction Co., \$5.48 for asphalt and \$5.24 for anchored concrete and \$5.75 for Bessemer block; Moellering Construction Co., \$5.36 for Metropolitan block; H. P. Streicher, \$6 for asphalt. Vitrified brick was chosen. The estimate is \$6,210.75. Harrison st., from Main to Superior st.: Brooks Construction Co., \$2.02 per sq. yd. for Bessemer brick, paving material only; Grace Construction Co., \$2.02; Moellering Construction Co., \$1.98 for Metropolitan block. Vitrified brick was chosen. The estimate is \$20,606. Harrison st., from Superior to Eureka st.: Brooks Construction Co., \$9.79 per sq. yd. for Bessemer brick and \$9.88 for Metropolitan block; Grace Construction Co., \$10.40 for Bessemer block; Moellering Construction Co., \$9.96 for Metropolitan block. Vitrified brick was chosen. The estimate of \$20,606.57.

**Elizabeth, M. J.**—For paving and flagging of various streets, as follows: For paving Grier ave., from Garden to Summer sts., with brick upon a concrete foundation: Samuel Sampson, \$8,898.10; T. Foster Callahan, \$8,644.33; Patrick Faughnan, \$8,669.66; J. J. Potts, \$9,153.75. For paving Elmwood pl., from Irvington to Union aves.: J. J. Potts, \$3,618.90; Samuel Sampson, \$3,425.36; Patrick Faughnan, \$3,369.22; T. Foster Callahan, \$3,359.62. For flagging Trumbull st., from Second to Division sts.: Enterprise Coal & Supply Co., \$4,742; the F. Lenhard Stone Co., \$4,720.75; T. Foster Callahan, \$4,975.50. For flagging East Grand st., from Livingston to Division sts.: Enterprise Coal & Supply Co., \$1,574.80; T. Foster Callahan, \$1,561.97; F. Lenhard Stone Co., \$1,124.48. For flagging Division st., from Livingston st. to Magnolia ave.: Enterprise Coal & Supply Co., \$1,189.82; T. Foster Callahan, \$1,181.74; the F. Lenhard Stone Co., \$1,477.38.

**Mount Vernon, N. Y.**—Bids for regulating, grading and paving of South st. are as follows: Eastern Asphalt Paving Co., \$2.25; new curb, 75 cts.; old curb, 25 cts.; granite blocks, \$3.15; brick pavement, \$2.10; brick pavement relaid, 75c.; macadam, 89 cts.; flags, 65 cts.; flags relaid, 10 cts.; curbstone headers, 25 cts. James Piro—Masonry, \$3; new curb, 80 cts.; old curb, 60 cts.; granite blocks, \$5; brick pavement, \$2.24; brick pavement relaid, \$1; macadam, \$1.30; flags, 85 cts.; flags relaid, 15 cts.; curbstone headers, 75 cts. Sabino Guarino—Masonry, \$3; new curb, 96 cts.; old curb, 40 cts.; granite blocks, \$5; brick pavements, \$2.24; brick pavements relaid, 25 cts.; macadam, \$1.24; flags, 90 cts.; flags relaid, 17 cts.; curbstone headers, 95 cts. Louis Petrillo—Masonry, \$2.25; new curb, 95 cts.; old curb, 25 cts.; granite blocks, \$4.95; brick pavement, \$2.25; brick pavement relaid, \$1.05; macadam, \$1.26; flags, 83 cts.; flags relaid, 14 cts.; curbstone headers, \$1.65. James Clarica—Masonry, \$3.40; new curb, \$1.05; old curb, 50 cts.; granite blocks, \$5.25; brick pavements, \$2.28; brick pavements relaid, \$1; macadam, \$1.15; flags, 80 cts.; flags relaid, 13 cts.; curbstone headers, 75 cts. Vincent Cortezio—Masonry, \$2.80; new curb, 97 cts.; old curb, 50 cts.; granite blocks, \$4.97; brick pavement, \$2.20; brick pavement relaid, \$1;

macadam, \$1.27; flags, 70 cts.; flags relaid, 12 cts.; curbstone headers, 90 cts.

**New York, N. Y.**—For repairing with granite blocks on concrete foundation, Webster ave., from Bedford Park blvd. to Gun Hill rd., and setting curb where necessary. Lowest bidder, Leahy Construction Co., 38,130 sq. yds. of completed granite block pavement (new blocks) on concrete foundation, laid with cement grout joints, and keep same in repair for one year from date of acceptance, \$3.10; 5,665 cu. yds. Class "B" concrete, \$3; 1,300 lin. ft. of new curb, furnished and set, 75 cts.; 9,270 lin. ft. of old curb, rejoined, recut on top and reset, 27 cts.; 4,550 sq. ft. new bridgestone for crosswalks, 50 cts.; 3,530 sq. ft. old bridgestone, rejoined and relaid, 10 cts.; total, \$143,304. Totals of other bids: Clinton Contracting Co., \$165,740; Atlanta Contracting Co., \$152,581; Asphalt Construction Co., \$183,849; Dunbar Contracting Co., \$163,785; Burnside Contracting Co., \$157,103. For regulating, grading, setting curbstones, flagging sidewalks, laying crosswalks, building approaches and erecting fences where necessary in E. 223d st., E. 224th st., E. 225th st., from Bronxwood ave. to Laconia ave. Lowest bidder, Burnside Contracting Co., as follows: 17,650 cu. yds. of earth excavation, 40 cts.; 350 cu. yds. of rock excavation, \$1; 8,550 lin. ft. new curb, 80 cts.; 34,625 sq. ft. cement flagging, 17 cts.; 112 sq. ft. new bridgestones, 50 cts.; 500 cu. yds. dry rubble masonry, \$1; 100 lin. ft. guard rails, 15 cts.; total, \$24,707. C. De Blaisio bid for this work \$24,501. For regulating, grading, setting curb, flagging approaches and erecting fences where necessary in E. 165th st., from Grant ave. to Walnut ave.; Voorhies Sullivan Contracting Co., \$25,904; L. Pepe, \$27,648; P. J. Kane Contracting Co., \$27,867; Pheon Contracting Co., \$23,970; J. D. Menna, \$22,157; Civannia & Cavaluzzo Contracting Co., \$28,128; DiMenna & DePadla, \$24,704; F. N. Palladino, \$27,308; J. O'Leary, \$23,531. For regulating, grading, setting curb, flagging sidewalks, laying crosswalks, building approaches and erecting fences where necessary in (a) W. 233d st., from Broadway to Albany rd.; (b) W. 234th st., from Kingsbridge ave. to Albany rd.; (c) Corlear ave., from 230th st. to 240th st.; Ames Transfer Co., (a) \$10,690, (b) \$20,450, (c) \$59,087; Watson Contracting Co., (a) \$14,733, (b) \$19,106, (c) \$46,755; McDonald & Barry, (c) \$50,049; J. B. Malatesta, (c) \$46,468. For paving with asphalt block on concrete foundation E. 133d st., from Cypress ave. to Southern blvd., to include 2,270 sq. yds. asphalt block pavement (3-in. blocks): Barber Asphalt Paving Co., \$7,944; Hastings Pavement Co., \$6,443. For repaving with asphalt blocks and granite blocks on concrete foundation Freeman st., from Southern blvd. to Westchester ave. Lowest bidder, Hastings Pavement Co.: 5,450 sq. yds. completed asphalt block pavement (3-in. blocks), and keep same in repair for five years, \$1.66; 1,150 sq. yds. completed granite block pavement (new blocks), laid with cement grout joints, and keep same in repair for one year, \$3.69; 1,050 cu. yds. of Class "B" concrete, including mortar bed, \$5.92; 500 lin. ft. new curb, \$1; 2,950 lin. ft. old curbstone, rejoined, recut on top and reset, 38 cts.; 50 sq. ft. new bridgestone for crosswalks, 78 cts.; 500 sq. ft. old bridgestone, rejoined and relaid, 15 cts.; total, \$21,241. Barber Asphalt Co. bid for work \$23,516. For repaving with sheet asphalt and asphalt blocks on concrete foundation Belmont ave., from 177th st. to Pelham ave., and repaving with sheet asphalt on concrete foundation Crescent ave., from Arthur ave. to E. 187th st. Lowest bidder, Asphalt Construction Co.: 19,750 sq. yds. completed sheet asphalt pavement, including binder course, and keep in repair for five years, \$1.29; 880 sq. yds. completed asphalt block pavement (3-in.), and keep same in repair for five years, \$1.87; 3,530 cu. yds. Class "B" concrete, including mortar bed, if required, \$5; 2,000 lin. ft. new curb, furnished and set, \$1; 9,500 lin. ft. old curb, rejoined, recut on top and reset, 44 cts.; total, \$50,953. Totals of other bids: Barber Asphalt Paving Co., \$52,033; Uvalde Contracting Co., \$54,799. For paving with bituminous pavement on concrete foundation Perry ave., from Moshulu Parkway north to Gun Hill rd. Lowest bidder, Dayton Hedges, as follows: 10,280 sq. yds. completed bituminous pavement, and keep in repair for five years, 90 cts.; 1,880 cu. yds. concrete, 75 cts.; total, \$15,452. Totals of other bids: Barber Asphalt Paving Co., \$20,690; Uvalde Contracting Co., \$19,418; Continental Public Works Co., \$17,731. For paving with bituminous pavement on concrete foundation (a) Valentine ave.;

(b) Webb ave., from W. 188th st. to Kingsbridge rd.; Uvalde Contracting Co. (a) \$10,451, (b) \$15,044; Barber Asphalt Paving Co., (a) \$10,889, (b) \$15,955; Continental Public Works Co., (a) \$9,620, (b) \$13,661; Dayton Hedges, (a) \$11,486.

**New York, N. Y.**—For constructing transverse road at Bedford Park blvd. in connection with Grand blvd. and course, together with all work incidental there to, and following are totals of bids received: McHarg-Barton Co., \$102,574; F. N. Lewis, \$111,911; Handy & Houlihan Contracting Co., \$101,392; Patrizzo & Hendrickson, \$102,219, and J. O'Leary, \$95,989. Following are unit prices on principal items of two lowest bidders on the above transverse road: (a) J. O'Leary, (b) Handy & Houlihan: 14,000 cu. yds. earth excavation, (a) 55 cts., (b) 90 cts.; 13,000 cu. yds. rock excavation, (a) \$1.85, (b) \$1.70; 6,900 cu. yds. filling and back fill, (a) 1 ct., (b) 1 ct.; 5,000 ft. lumber, (a) \$20, (b) \$50; 400 cu. yds. dry rubble masonry, (a) \$1, (b) \$1; 475 cu. yds. Class "A" concrete, (a) \$7, (b) \$7; 4,000 cu. yds. Class "B" concrete, (a) \$5.70, (b) \$5.50; 60 cu. yds. cinder concrete, (a) \$2, (b) \$2; 9,300 sq. ft. waterproofing, (a) 7 cts., (b) 7 cts.; 285 cu. ft. granite newels, fenders and coping, (a) \$3, (b) \$3; 1,820 lin. ft. vitrified stone-ware pipe drain, 12-in., (a) \$1.64, (b) \$2; 21 manholes, (a) \$40, (b) \$40.50; three standard receiving basins, (a) \$150, (b) \$200; 300,000 lbs. steel and iron (exclusive of railings), (a) 3 cts., (b) 3 cts.; 1,600 sq. ft. woven wire fabric, (a) 7 cts., (b) 7 cts.; one maintenance of water supply service, (a) \$1,000, (b) \$1,500; one maintenance of traffic and cleaning-up, (a) \$25, (b) \$100; 3,100 lin. ft. new blue-stone curb, (a) 60 cts., (b) 75 cts.; 22,150 sq. ft. cement flag, (a) 12 cts., (b) 16 cts.; 8,400 sq. yds. asphalt block pavement, (a) \$1.50, (b) \$1.50; 1,600 sq. yds. macadam pavement, (a) 70 cts., (b) \$1; 16,400 sq. ft. surface treatment of concrete, if required, (a) 2 cts., (b) 4 cts.

**Fargo, N. Dak.**—For paving streets in Fourth and Fifth Wards, as follows: In Fourth Ward: Central Westrumite Co., \$1.89, total \$93,091.94; Blome Concrete, \$2.20, total \$134,855.60, by R. S. Blome & Co.; Kettle River Co., for creosoted blocks, \$2.68; Dolarway, \$1.35, total \$66,494.35; bitulithic, by Warren Bros., \$2.23, total \$109,835.65; P. McDonald, of Duluth, brick, \$2.54; sheet asphalt, \$2.20; bituminous concrete, \$2.10. S. Birch & Sons Co.'s bids were as follows: Fourth Ward, Portland cement concrete, \$1.30, total \$79,687.40; sheet asphalt, \$1.09, total \$98,017.45; bitulithic, \$2.16, total \$106,390.80; creosote blocks, \$2.52; brick, \$2.32, total \$121,189.84; bituminous concrete, \$1.39, total \$68,464.45. Following are bids of the Kaw Paving Co.: Dolarway, \$1.35, total \$66,494.25; bituminous concrete, \$1.68, total \$82,748.40; cement concrete, \$1.53, total \$82,752.30; brick, \$2.43, total \$126,935.91. Warren Bros.: Brick, \$2.40, total \$7,156.80; this being for paving between tracks of street car people. Same firm bid \$1.50 for gutters and alley approaches or in lump \$10,000. M. Ford, of Cedar Rapids, bid as follows: Sheet asphalt, \$2, total \$98,510; brick, \$2.33, total \$121,712.21; bituminous concrete, \$1.40, total \$68,957. In this case Steve Birch was only 1 cent below this bidder in two or three instances. O. C. Chapin, Leavenworth, Kan., Dolarway, \$1.27. The General Contracting Co., of Minneapolis, bid as follows: Creosoted blocks, \$2.55, total \$125,600.25; brick, \$2.65, total \$138,428.05. Following are bids of James Kennedy: Bituminous concrete, \$1.64; bitulithic, \$1.75; sheet asphalt, \$1.85; brick, \$2.50; creosoted blocks, \$2.55; Portland cement concrete, \$1.40. There are 20,000 sq. yds. to be paved in Fifth Ward, not counting space between tracks of street car company. Bids were as follows: Central Westrumite Co., \$1.89, total \$29,480.22; R. S. Blome Co. bid on the Blome concrete, \$2.20, total \$44,385; the Kettle River Co. bid \$2.68 on creosote block; Dolarway by Kaw Paving Co., \$1.55, total of \$21,573. This bid was made conditioned that the company secure the Fourth Ward as well; the same company bid on bituminous concrete, \$1.68, total \$26,204.64; on brick, \$2.43, total \$41,509.26; on Portland cement concrete, \$1.35, total \$27,236.25; Warren Bros. bid on bitulithic, \$2.25, total \$43,783.54; brick, \$2.40, total \$3,561.60, this being for gutters and alleys, cement concrete, \$1.50, total \$5,250; P. McDonald, of Duluth, bid, sheet asphalt, \$2.20; bituminous concrete, \$2.10; brick, \$2.54. Bids of Steve Birch in Fifth Ward were as follows: Cement concrete, \$1.34, total \$26,227.50; cement in alleys and gutters, \$1.40; bituminous concrete, \$1.39, total \$21,681.22; brick, \$2.32, total \$39,630.24; creosote block, \$2.52; bitulithic, \$2.16, to-

tal \$33,694.68; sheet asphalt, \$1.99; total \$31,040.02. M. Ford, of Cedar Rapids, bid as follows: sheet asphalt, \$2; total \$31,198; bituminous concrete, \$1.40; total \$21,837.72; brick, \$2.33; total \$39,801.06. O. C. Chapin, of Leavenworth, Kan., bid Dolarway, \$1.27. The General Contracting Co., of Minneapolis, bid, creosoted blocks, \$2.55; total \$39,754.90. The same company bid brick, \$2.65; total \$45,267.30. Bids of James Kennedy in Fifth Ward were as follows: Bituminous concrete, \$1.64; bituminous, \$1.75; provided the city protects him; sheet asphalt, \$1.85; brick, \$2.50; creosoted block, \$2.55; Portland cement concrete, \$1.40.

### SEWERAGE

**McGehee, Ark.**—Plans are being prepared by Missouri Valley Engineering Co., of Mendenhall, S. Dak., for sewer system.

**Colfax, Cal.**—Installation of sanitary sewer system is being discussed.

**Jackson, Cal.**—Installation of complete sewer system is contemplated.

**Los Angeles, Cal.**—At suggestion of City Engineer, Board of Public Works will recommend to Council that that portion of Arroyo de la Sacatello storm sewer extending from Temple st. to Melrose ave. be constructed immediately.

**Shastina, Cal.**—Plans are being considered for installation of sewer system.

**Waterbury, Conn.**—Mayor Francis T. Reeves favors bonding city for \$200,000 for sewer work.

**Wilmington, Del.**—Construction of sewers is being considered.

**Fort Meade, Fla.**—Election will be held April 16 for voting on bonding for sewerage.

**Lakeland, Fla.**—James Nesbet Hazelhurst, consulting engineer employed by Board of Bond Trustees, is making preliminary surveys for sewerage pipe lines. As soon as they are through with preliminary work estimate will be made and advertisements for bids will be considered.

**Atlanta, Ga.**—Construction of sewers in various streets is being considered.

**Atlanta, Ga.**—Establishment of separate sewer systems for storm water and sanitary sewage is being discussed.

**Carrollton, Ga.**—City will vote April 3 on \$3,000 bond issue to extend and improve sewer system.

**Frostburg, Md.**—City is planning to relay 2,800 ft. of 30-in. sewers in eastern section.

**Lowell, Mass.**—Council votes to have sewer constructed in Central st.; estimated cost as follows: 530 yds. of earth excavation, \$1,325; 204 ft. of 10-in. pipe, \$102; manhole and castings, \$75; 204 ft. of timber, \$102; miscellaneous, \$50; watchman, two shifts, \$40; policing, \$30; 22 sq. yds. of granite block at each side of street, \$155; 58 sq. yds. of old granite blocks, \$58; 22 sq. yds. of granite block, west side, \$154; hanging water pipe and cutting manhole, \$59; total, \$2,150.

**Lowell, Mass.**—City Engineer Kearney is busy working on estimates for sewers on Viola, Carolyn, Hawthorne, Damon and Dalton sts. and Highland ave.

**Duluth, Minn.**—Lowest bid received on construction of Woodland sanitary trunk sewer was that of Hugh Steele at \$35,000.

**Hightstown, N. J.**—Councilman Franklin has presented resolution which has been adopted providing that Council shall submit to voters question of construction of sewage system that shall not exceed in cost of \$35,000.

**Paterson, N. J.**—Board of Public Works is considering construction of sewers in various parts of city.

**Rahway, N. J.**—Resolution has been adopted that City Engineer advertise for bids for proposals to construct sewers in following streets: Harrison, Whittier, Newton, Cottage pl., Munroe, Bond, Scott ave. and Main st., between Munroe and Irving st.

**Salem, N. J.**—Salem Council will hold special meeting to vote on question of improvement of sewer system. Engineer Potts, who has made preliminary plans, estimates cost at about \$65,000.

**Rochester, N. Y.**—By Board of Contract & Supply, for constructing Contract 4, including Division 8 of part of No. 7 of sewage disposal system. Alternate bids were received for steel pipe, ingot iron pipe and cast iron pipe, to T. A. Gillespie Co., for steel pipe. Following are bids received: (a) T. A. Gillespie Co., 50 Church st., New York City (awarded contract); (b) Central Dredging Co., Cleveland, O.; (c) Lake Erie Dredging Co., Buffalo; (d) Houston Barnard, Rochester; (e) H. W. Phillips, Quincy, Mass.:

	Steel Pipe				Ingot Iron Pipe		Cast Iron Pipe	
	a	b	c	d	a	d	e	c
9,000 cu. yds. earth excavation, land section.....	\$1.50	\$0.75	\$2.00	\$1.00	\$1.50	\$1.00	\$2.00	\$2.00
2,200 lin. ft. 66-in. outlet pipe, land section.....	20.00	28.94	20.00	15.00	27.00	18.00	20.00	32.00
7,054 lin. ft. 66-in. outlet pipe, lake section.....	26.00	28.50	30.00	36.00	33.00	39.00	46.00	42.00
10 M. ft. b. m. timber and plank.....	60.00	50.00	60.00	50.00	60.00	50.00	48.00	60.00
100 cu. yds. concrete masonry.....	7.50	10.00	7.00	7.00	7.50	7.00	9.50	7.00
1 outlet crib (lump sum).....	20,000.00	17,500.00	20,000.00	20,000.00	20,000.00	20,000.00	15,000.00	20,000.00
1,000 cu. yds. additional rip-rap.....	3.00	3.25	2.50	4.50	3.00	4.50	2.25	2.50
Totals .....	\$265,254	\$293,707	\$297,420	\$321,644	\$330,032	\$349,406	\$405,164	\$408,468

**Trenton, N. J.**—Ordinances have been passed authorizing construction of sewers in various streets.

**Springfield, O.**—Bonds in sum of \$6,125.80 will be sold on April 9 for storm water sewers.

**Oklahoma City, Okla.**—Special ordinance passed by City Commissioners authorizing Mayor to call an election upon bond issue of \$331,000 for storm sewer extension and bridge construction will be repealed.

**Erie, Pa.**—Resolution has been adopted appropriating \$5,000 to pay for expense of extending canal sewer from present outlet to water line by way of Peach st.

**Hazleton, Pa.**—Ordinance has been passed providing for sewer on Broad st., from Linden to Lincoln sts.; also on various other streets.

**Scranton, Pa.**—Ordinances are being considered for sewer and paving of Albright ave., between Green Ridge st. and North Main ave.

**Sharon, Pa.**—Construction of new sewers is being discussed.

**York, Pa.**—Board of Public Works is considering plans for selection of engineer to prepare data for completion of sewer system. Appropriation of \$1,000 is allowed in 1912 city budget for proposed survey and other work to be done.

**Dallas, Tex.**—County Commissioners have notified Board of Municipal Commissioners that county will bear 37 per cent. of cost of building storm sewer on Houston st. to new viaduct, which is now being paved. Street Commissioner Lee will recommend that storm sewer be built and that bids be advertised for at once. Total cost is estimated at \$1,500 to \$1,600.

**Nacogdoches, Tex.**—In bond election held to vote bonds for sewerage, electric light plant and street paving, totaling \$65,000, propositions carried by good majority.

**Abingdon, Va.**—City is contemplating construction of sewer system to cost \$25,000.

**Cedar Grove, W. Va.**—Town in considering bond issue of about \$5,000 to \$10,000 for sewer and road improvements.

**Milwaukee, Wis.**—Construction of adequate sewage disposal system is being discussed.

**Waukesha, Wis.**—Construction of sewer on Delafield ave. has been authorized.

**Laramie, Wyo.**—City Clerk has been authorized to advertise for bids for construction of south side sewers.

### CONTRACTS AWARDED

**Oxford, Ala.**—By City, for laying sewerage, to McCrary & Co., of Atlanta.

**Batesville, Ark.**—For constructing sewer system, to Miller Engineering Co., Southern Trust Bldg., Little Rock, Ark., at \$10,000.

**Los Angeles, Cal.**—For constructing sewer in Hooper ave., from 38th st. to 20th st., by Board of Public Works, to John Radich, who offered to do work for \$17,600. M. N. Pekich was awarded contract for building sewer in Colton st., from Douglas to Toluca sts., at \$465.

**Los Angeles, Cal.**—To John Radich, at \$17,600, for construction of sewers.

**Oakland, Cal.**—To William Heafey, 489 Orchard st., for construction of sewer in E. 12th st.

**Oakland, Cal.**—To F. H. Dahnke, 2333 Fruitvale ave., for sewerage 71st ave. and Seminary ave.

**Galesburg, Ill.**—For constructing combined storm and sanitary sewer in Main st., to E. R. Harding Co., Racine, Wis., at \$17,044. Other bids were: A. R. Waggoner, Oshkosh, Wis., \$18,307; J. B. McAuley, Galesburg, \$17,631. Engineer's estimate was \$17,056.

**Boonville, Ind.**—For constructing south side main sewer and branches, by City, to John L. Newman, Evansville, Ind., at \$54,764, for brick and pipe sewers. Other bids were: (a) concrete and pipe; (b) brick and pipe, Stinchfield, Reichert & Sanders, Evansville (a) \$55,708; (b) Roetzel & Chipman, Evansville (a) \$57,034; Julius Keller Construction Co., Indianapolis (a) \$58,874; Independent Construction Co., Terre Haute, Ind. (a) \$58,889, (b) \$59,584; Michaels, Mimmick Construction Co., Marion, Ind. (a) \$60,325; W. Hancock Co., Louisville, Ky. (a) \$62,082, (b) \$64,286; James Terry & Sons, Chambersburg, Pa. (a) \$64,102, (b) \$68,180; Holler, Bask & May Contracting Co., Evansville, Ind. (a) \$84,329. W. A. Schafer is City Clerk.

**East Chicago, Ind.**—To F. G. Proudfoot, 1614 Unity Bldg., Chicago, at about \$30,000, for construction of 7,000 ft. of 15-in., 6,000 ft. of 12-in. and 23,500 ft. of 6-in. vitrified pipe sewer and 69 man-holes.

**Sioux City, Ia.**—To Julius Overson, for construction of sanitary sewer in S. Lemon st., and Lewis & Leeder, for construction of storm water sewers in Jackson and 24th sts.

**Olathe, Kan.**—To J. H. Cosgrove & Son, city, for construction of 3,800 ft. of sewer.

**St. Joseph, Mo.**—To Kenney Construction Co., for sewer in District No. 96.

**Auburn, Neb.**—To Elmer Dovel and G. W. Hoyes, for construction of sewers in Sewer Districts Nos. 2, 14 and 29.

**Dundee, Neb.**—By Village Council, to James Jensen, for construction of sewers.

**Newark, N. J.**—By Board of Street & Water Commissioners, to Jas. A. Christie, 38 Thomas st., city, for construction of Runyon st., Smith st. and Patterson st. sewers, at \$2,442.85, \$878.80 and \$295.20, respectively.

**Scranton, Pa.**—For constructing sewers in Section K, 17th Sewer District, to Matthias Stipp & Co., Board of Trade Bldg., at approximately \$50,000.

**Greenville, S. C.**—By City, to West Construction Co., Chattanooga, Tenn., to construct storm sewer in connection with street paving.

**Jellico, Tenn.**—By Water Works and Sewer Commission, for furnishing materials and constructing complete system of house sewers, comprising 4.3 mile of 12- to 8-in. clay pipe sewers with all man-holes and other accessories, without pumping or purification, to B. H. Bellinger and Howard Neely, of Jellico, for \$21,000. Engineer, Walter G. Kirkpatrick, of Birmingham, Ala.

**Austin, Tex.**—To John L. Martin, 408 Congress ave., at \$1,790, for construction of 8-in. terra cotta sewer in connection with U. S. Post Office building.

**Colonial Beach, Va.**—By City, to Newport Engineering & Contracting Co., Newport News, Va., for sewer construction to cost \$20,000; disposal plant included.

**Richmond, Va.**—By City, to Warner, Moore and Co., for terra cotta sewer pipe, at 70 per cent. from list price.

**Richmond, Va.**—By City, to A. W. Maynard & Co., for construction of sewer in Leonard st., to cost \$6,069.

**Spokane, Wash.**—By City Commissioners, for building sewers on 17th ave., Latawah st. to Upper Terrace rd., and on Upper Terrace rd., 17th to 18th ave., to Lang & Smith, lowest bidders, at \$6,660.

**Spokane, Wash.**—By City Commissioners, as follows: To McMillan & Shaughnessy, sewer in alley of blocks 7 and 8, Sinto addition, Pearl to Division st., for \$1,679; estimated, \$1,930. To J. L. Wood, sewer in Lamont st., from 27th to 28th, and on 28th, Lamonte to Grand blvd., for \$2,012; estimate, \$2,749.

**Prince Albert, Sask.**—For supplying sewer pipe, by City Commissioners, to McKenzie & Thayer, at \$23,657. Other bids as follows: Dominion Sewer Pipe Co., \$23,202; Redwing Sewer Pipe Co., \$23,124; McComb Sewer Pipe Co., \$24,924; W. F. Lee, \$25,503, and A. S. Rosing, \$23,816.

### BIDS RECEIVED

**Brooklyn, N. Y.**—Bids have been received for 11 proposed sewer improvements in Borough of Queens, total of lowest bid aggregating \$156,044.49. Proposed undertaking will be in Long Island City, Ridgewood, Richmond Hill and Rockaways. Plan No. 6 for Rockaways, J. H. Holmes, successful bidder, at \$26,336.50, consists of temporary sewer and appurtenances for purpose of abating



nuisance and to prevent damage to property in Wave Crest ave. Contract includes also automatic electric pumping station at Cedar ave. and Wave Crest ave. Highest bid on this job was \$61,973, nearly two and a half times Holmes bid, and next highest bid was \$52,227. Following are lowest bidders on other contracts: Sewer in Hamilton ave., from Jamaica ave. to Ashland st., Richmond Hill; in Ashland st., from Hamilton ave. to Birch, and in Birch, from St. Ann's ave. to Hillside ave.; lowest bidder, Joseph Sigretto, \$30,163.56. In Troutman st., from Brooklyn line to Metropolitan ave., and in Metropolitan ave., from Troutman st. to Starr, Ridgewood, MacFarlane Contracting Co., \$25,065.26. In Brevoort st., from Jamaica ave. to Metropolitan ave., Joseph L. Sigretto & Co., \$13,277.87. In Jamaica ave., from Greenwood ave. to North Vine st., Richmond Hill, J. H. Holmes, \$28,046.65. In Newtown rd., Long Island City, from 13th ave. to 18th ave., Frank Street, \$2,322.70. In Hancock st., in Webster ave., to the corner north of Pierce ave., Long Island City, and in Washington and Pierce aves., from Hancock st. to the Boulevard, Gabriel Hill, \$14,146; highest bid \$22,773.70. In Flushing ave., from Metropolitan ave. to Atlantic st., Maspeth, Newmann & Carey Co., \$14,804.50; the highest bid was \$26,004.40. In Sunswick st., Long Island City, from Wilbur to raynton, Clancy & Van Alst, \$1,095. In Hopkins st., Long Island City, from Taylor st. to Clark, Clancy & Van Alst, \$606.30. Receiving basin southeast corner 14th st. and the Boulevard, Long Island City, Gabriel Hill, \$180.15.

### WATER SUPPLY

**Glendale, Ariz.**—City of Glendale has entered into agreement to purchase water works from F. H. Sine. Town meeting will shortly be called to decide upon issue of \$15,000 of bonds to cover purchase of water works.

**Nogales, Ariz.**—Town Board has purchased plant of Nogales Water Co. for \$60,000.

**McGehee, Ark.**—Plans are being prepared by Missouri Valley Engineering Co., of Mitchell, S. Dak., for water works system.

**Sacramento, Cal.**—Proposition of sinking caisson in bed of Sacramento River to furnish supply of clear water to Sacramento and relieve danger which is said to threaten city intake from change in river current, due to construction of new railroad bridge, is being discussed.

**Wray, Col.**—Bond issue of \$60,000 has been voted for construction of water works system.

**Fort Meade, Fla.**—Election will be held April 16 for voting on bonding for water works.

**Gainesville, Fla.**—City offers for sale \$40,000 water works extension bonds. J. E. Webster, Secretary.

**Thomaston, Ga.**—At recent meeting of City Council it was unanimously decided to install water meters on completion of water system here, Council believing that it would be more satisfactory to patrons than would flat rates. Large quantity will at once be ordered, which will be installed by city free of charge and monthly rental charged.

**La Salle, Ill.**—Voters have authorized purchase of La Salle Water Co. at \$30,000, and \$20,000 for main extensions.

**Columbus, Ind.**—Special election has been called for April 16, when proposition to build mechanical filter will be voted on. Cost is limited to \$65,000.

**Cumberland, Md.**—Bonds in sum of \$369,000 have been sold for water works.

**Jordan, Minn.**—Proposition to issue \$7,000 bonds carried for new water works system.

**Kerkhoven, Minn.**—People will shortly vote on \$16,000 bond issue for water works system.

**Gretna, Neb.**—Plans are being prepared by Bruce & Standeven, engineers of Omaha, for water works system.

**Mason City, Neb.**—City has voted to erect standpipe and to extend water mains.

**Bosalia, Neb.**—Bond issue of \$8,000 has been voted for water works.

**Hightstown, N. J.**—City Clerk has been instructed to put out bids for laying extensions in water pipes on Monument, William, Broad, Outcalt and Ward sts. and Second ave. Size of the pipe to be 4-in.

**Trenton, N. J.**—Johnson & Fuller, New York engineers, will prepare plans for filtration and sedimentation plant.

**Woodbury, N. J.**—City is considering construction of filter plant.

**Woodbury, N. J.**—Installation of filter plant is being considered by Council.

**Corning, N. Y.**—Board of Public Works will consider matter of purchasing new pump of 3,000,000-gal. daily capacity for Corning Water Works plant to give city dependable and adequate supply of water at all times. Such pump with engine necessary to its operation can be installed for about \$10,000.

**Wellsville, N. Y.**—George A. Johnson, of Johnson & Fuller, New York, has been engaged by Water Committee on question of water works improvement.

**Akron, O.**—State Health Board has approved plans for Akron's municipal water works system and filtration plant. Council will complete its legislation for organization of plant and on April 1 city will take over old plant from the Akron Water Works Co.

**Dayton, O.**—Two 100,000-gal. standpipes will probably be constructed, one in Dayton View and other on west side. City Engineer Kline estimates cost at \$16,000.

**Granville, O.**—Construction of water works system is being considered by City Council.

**Navarre, O.**—Water works bonds, amounting to \$25,000, have been sold by City Council.

**Springfield, O.**—Bonds in sum of \$9,000 will be sold on April 9 for purchase of water rights.

**Toledo, O.**—Advisability of connecting high pressure system to automatic sprinkling devices will be discussed before Public Improvement Committee of Council.

**Youngstown, O.**—Bonds in sum of \$50,000 have been sold for water works extension.

**Bighart, Okla.**—City will spend \$12,000 to \$16,000 on installation of water works.

**Monmouth, Ore.**—Installation of water works system at cost of \$20,000 has been authorized.

**Erie, Pa.**—Plans are being considered by Water Commissioners for new \$500,000 plant.

**Erie, Pa.**—Petitions for extension of water mains southwardly on Peach st. near south end of street, 125 ft. and on Wallace st., between 23d and 24th sts., have been granted.

**Pawtucket, R. I.**—Resolution has been passed authorizing City Solicitor to apply to General Assembly for authority to issue bonds for extension and improvement of water works system.

**Barnwell, S. C.**—Water works plant will shortly be constructed.

**Johnson City, Tenn.**—Johnson City has sold bond issue for erection of municipal water works plant. Amount of the issue was \$212,000. They were sold to Davies, Bertram & Co. of Cincinnati.

**Houston, Tex.**—City is planning water works improvements to cost \$100,000.

**Puyallup, Wash.**—Council will purchase water meters and install them in hotels, factories, etc.

**Salt Lake City, Utah.**—Water Department is preparing to lay water main extension on west side of Fifth East st.

**Raymond, Wash.**—Council has authorized contract with Engineer F. C. Kelsey, of Portland, for survey and estimates on installation of system to bring water from south fork of Willapa River into city limits with 100 lb. pressure at center of business district.

**Woodland, Wash.**—City is contemplating construction of gravity water works system to cost about \$6,000.

**Belleville, Wis.**—Bids will be received in April for construction of water works plant to cost \$15,000.

**Manitowoc, Wis.**—Plans will be prepared by Arthur J. Morgan, Consulting Engineer, for larger water supply.

**Cody, Wyo.**—City will vote on April 16 on \$65,000 bonds for water works.

**London, Ont., Can.**—Board of Water Commissioners are receiving bids for 645 tons of cast iron pipe and 35 tons special.

### CONTRACTS AWARDED

**Montgomery, Ala.**—To Hudson Engineering Co., of New York, N. Y., for developing and adjusting its 18 artesian wells. This company guarantees an increased yield of 25 per cent. of artesian water.

**Dermott, Ark.**—By City Council, for enlarging water system, to R. M. Galbraith, of Pine Bluff, to include steel tank of 100,000-gal. capacity, an 8-in. well and 3,000 ft. of water main.

**Maricopa, Cal.**—For constructing 100,000-gal. iron tank and laying about two miles of steel water pipe, to Los Angeles Mfg. Co., Los Angeles, Cal.

**Orange, Cal.**—For furnishing 17,000 ft. of 4-in., 8,000 ft. of 8-in., 3,000 ft. of 6-in., 1,950 ft. of 12-in., and 1,900 ft. of 14-in. cast iron water pipe, 14 tons of special fittings, 35 fire hydrants 2½ in.,

and 20 gate valves, to U. S. Pipe Co., of San Francisco, at \$22,000.

**Washington, D. C.**—To L. M. Booth, 136 Liberty st., New York City, at \$1,980, for furnishing and installing water softening plant at District pumping station, at Washington.

**Bloomington, Ill.**—To McGregor & Lederer, for constructing water mains on Low st., for about \$11,440.

**New Castle, Ind.**—For laying 10,000 ft. of 8-, 10- and 12-in. water mains, to Hutzell & Co., New Castle.

**Kentwood, La.**—For furnishing 350 tons of 6- and 8-in. cast iron water pipe and 10 tons of specials, by City, to American Cost Iron Pipe Co., Birmingham, Ala., at \$26.85 for pipe and \$55 for specials.

**Saginaw, Mich.**—For furnishing one 6,000,000-gal. Meyer gear pump, to Laidlaw-Dunn-Gordon Co., 211 W. Fourth st., Cincinnati, O., at \$7,500.

**Hill City, Minn.**—For constructing water works system, to J. C. Robertson, St. Paul, at \$10,990.

**St. Paul, Minn.**—For laying water mains in Lexington ave. and Dale, Front and Maryland sts., to O'Neill & Preston, St. Paul, at \$22,000.

**Kansas City, Mo.**—For furnishing cast iron water mains, to United States Cast Iron Pipe Co., at \$7,000.

**Atlantic City, N. J.**—To Holland & Donnelly, Atlantic City, to lay a 24-in. water main, between Missouri and Albany aves., for about \$14,000.

**Cleveland, O.**—To Thomson Meter Co., of Brooklyn, N. Y., for furnishing ½-, 1½-, 2-, 3- and 4-in. water meters for Cleveland Water Department, at \$39,000.

**Sutherland, Ore.**—For constructing water system, to Jeffery & Buffton, Portland, at \$14,881.

**Lancaster, Pa.**—For furnishing and installing two horizontal water-tube boilers of 250 horsepower each, by Water Commissioners, to Babcock & Wilcox Co., 85 Liberty st., New York, at \$9,173.

**Oil City, Pa.**—By Oil City Water Board, for year's supplies, as follows: Capping water mains, Mack Plumbing Co.; fire hydrants, Darling Pump & Manufacturing Co.; Williamsport; valves, Rensselaer Valve Co., Troy, N. Y.; cast iron pipes and special castings, United States Cast Iron Pipe & Foundry Co., Scottsdale, Pa.; meters, one-half contract, to National Meter Co., New York; one-fourth to Henssey Manufacturing Co., South Boston, and one-fourth to the Pittsburgh Meter Co., East Pittsburgh.

**Reading, Pa.**—By Board of Water Commissioners, to J. A. Martin, at \$1,466, for laying water pipes and appurtenances.

**Jellico, Tenn.**—For furnishing two 750,000-gal. pumps, to Platt Iron Works, Atlanta, Ga.

**Lawrenceville, Va.**—To J. B. McCrary Co., Third National Bank Bldg., Atlanta, Ga., to construct water, light and sewer system to cost \$50,000.

**Richmond, Va.**—By Subcommittee of Committee on Water, for meter boxes, to Boyd Iron Works, and for tops, to McGhee & Co.

**Ripley, W. Va.**—By Board of Commissioners of Jackson County, to Massie & Roushlin Co., at \$10,285.30, for construction of system of water works.

**Durand, Wis.**—For constructing water system, to F. C. Robinson & Co., Manitowoc, Wis., at \$20,000.

**Winnipeg, Man.**—For furnishing horizontal turbine pump, to Chapman & Walker, Ltd., Toronto, at \$8,670.

**Ridgetown, Ont.**—For 50 horsepower gas engine, gasoline engine, two 500,000-gal. triplex pumps, three deep well pumps, etc., to Canadian Fairbanks-Morse Co., of Toronto, for \$7,500. F. W. Farncomb, Engineer, London.

### LIGHTING AND POWER

**Birmingham, Ala.**—Tidewater Power Co. has been granted 30-year franchise to operate electric lighting plant.

**McGehee, Ark.**—Plans are being prepared by Missouri Valley Engineering Co., of Mitchell, S. Dak., for electric light plant.

**Glendale, Cal.**—Board of Trustees has ordered that ornamental street lighting standards be placed on Fourth st., Brand blvd. and Glendale ave.

**Dalton, Ga.**—Dalton will extend its Great White Way on Crawford st., from Hamilton to Cleveland sts., giving city 10 blocks of handsome street lighting system. City Council has authorized this extension.

**Central City, Ia.**—F. J. Cross has been granted franchise to furnish electric lights and power.

**Hampton, Ia.**—Council is contemplating the purchase of plant of Jas. Roe, or of building municipal light plant.

**Sheldon, Ia.**—Franchise will be granted

M. F. Logan to build and maintain electric light plant.

**Villisca, Ia.**—Question of laying electric light plant or building new one will be voted on April 15. Bonds of \$10,000 will probably be issued.

**Corydon, Ky.**—Construction of electric light system is being considered.

**Kalamazoo, Mich.**—People will be asked to vote at spring election on \$140,000 bond issue for ornamental street lighting system and municipal lighting plant.

**Duluth, Minn.**—City Council has voted unanimously not to make contract with Duluth Edison Electric Light Co., and offered to buy company's plant. City recently voted for public ownership by big majority. Electric light people would not say whether they would sell. If they do not, city will build plant of its own.

**Macclias, Me.**—Contract with Macclias Electric Light Co. having expired, it has been voted to empower selectmen to make contract for lighting streets, with lights not less than 32 candle power, and for term not to exceed three years.

**Camden, N. J.**—City Council has appointed Commission to prepare plans for municipal lighting plant. Ordinance has passed first reading authorizing \$300,000 bond issue for building of plant.

**Brooklyn, N. Y.**—Two bids have been received by North Hempstead Town Board to supply light in New Hyde Park, one from Public Service Corporation, which claims that it will supply gas for \$29.50 a light per year, and other from Nassau Light & Power Co., which claims that it will furnish electricity at \$15 per light a year. Matter has been laid over for two weeks.

**Little Valley, N. Y.**—Special village election has been called for April 9 to vote upon question of granting franchise to United Natural Gas Co. to pipe village for gas.

**Waukegan, N. C.**—Electric light plant will be constructed by city.

**Cincinnati, O.**—Resolution has been passed for cluster boulevard gas lights on Clifton ave., between Ludlow ave. and McMillan st.

**Cleveland, O.**—On April 8 city will sell first half of authorized \$2,000,000 municipal lighting bond issue. Second \$1,000,000 will be sold when money is needed in light plant construction.

**Salem, O.**—Bailey Engineering Co., of Alliance, is preparing plans for electric light distributing system.

**Springfield, O.**—Bonds in sum of \$60,000 will be sold on April 9 for street lighting.

**Youngstown, O.**—Installation of municipal lighting system is being considered.

**Flandreau, S. Dak.**—Franchise has been granted Ladd Electric Light Co. for supplying electric lights.

**Marlin, Tex.**—City Council has granted franchise to Waco parties for the establishment of another electric light and power system in Marlin.

**Nacogdoches, Tex.**—Bond issue of \$20,000 has been voted by city for electric light plant.

**Hillyard, Wash.**—Committee has been appointed to investigate cost of municipal light and power plant.

**Spokane, Wash.**—City Council has ordered more new street arcs installed in various parts of city.

#### CONTRACTS AWARDED

**New York, N. Y.**—For installing electric equipment in School 47, Borough of Bronx, to T. Fred. Jackson, Inc., for \$10,575.

**Uniontown, Pa.**—By Borough Council, to West Penn Electric Co., to furnish street lights on 5-year contract, at \$70 per lamp per year.

**Pierre, S. Dak.**—By State Capitol Commission, to Pierre Electric Co., contract for electric lights and conduits on capital grounds, for \$5,580.

#### FIRE EQUIPMENT

**Birmingham, Ala.**—Sum of \$5,000 will be spent in purchase of auto chemical engine.

**Trinidad, Col.**—Purchase of auto fire truck has been authorized; cost \$10,000.

**New London, Conn.**—Purchase of combination chemical engine, hose wagon and steamer is being considered.

**Jacksonville, Fla.**—Perspective has been prepared by Chief Thomas W. Haney, of Jacksonville Fire Department, for erection of handsome new fire station on lot recently acquired by city on corner of Jefferson and Forsyth sts.

**Dawson, Ga.**—At meeting of City Council contract was closed for combination chemical engine and hose motor car for Fire Department. Machine was bought through Lamar Auto Co., at cost of \$6,000.

**Rome, Ga.**—It has been voted to apply \$2,500 on purchase of automobile fire engine now in use at No. 2.

**Pekin, Ill.**—Purchase of auto chemical and hose wagon is being considered.

**South Bend, Ind.**—City Council is contemplating motorizing fire apparatus at cost of \$11,000.

**Sac City, Ia.**—Purchase of new chemical fire engine is contemplated by City Council.

**New Albany, Ky.**—Purchase of motor apparatus is contemplated.

**Saginaw, Mich.**—Sum of \$8,500 for purchase of new auto fire truck has been included in budget of Fire Department.

**Little Falls, Minn.**—Purchase of additional fire hose is being considered.

**St. Joseph, Mo.**—Three new fire houses, for whose construction Board of Public Works has authorized J. P. Srite, Clerk, to advertise for bids, will cost approximately \$22,000. They will be at Fourth and Charles sts., Fourth and Sycamore sts., and 33d st. and Litchell ave. First house will cost about \$10,000 to build, and other two \$6,000 each.

**Manchester, N. H.**—New fire alarm system is being discussed.

**Hoboken, N. J.**—Tax Board of Hoboken has decided to build new fire house to take place of antiquated home of Engine Co. No. 3, situated on border line between Hoboken and Jersey City.

**Hoboken, N. J.**—West Hoboken Town Council will buy new fire apparatus in near future. One automobile combination wagon and one new steamer drawn by horses will be added to present equipment. Total cost of two new fire fighting apparatus, it was estimated, would be about \$11,000.

**Morristown, N. J.**—It has been decided by Fire Committee of Board of Aldermen to purchase new automobile hose wagon this year or first part of next. New apparatus will go to First Ward Hose Co.

**Buffalo, N. Y.**—Purchase of auto hose cart and engine, to cost about \$8,500, has been recommended by Fire Committee.

**Falconer, N. Y.**—Election will be held for voting on purchase of combination automobile hose wagon and hook and ladder truck.

**Lake Placid, N. Y.**—Plans for two-story fire house are being made by Max H. Westhoff, of Saranac Lake; estimated cost, \$8,000.

**Saranac Lake, N. Y.**—Sum of \$2,000 has been voted for fire apparatus.

**Dayton, O.**—Twenty-five thousand dollars will be appropriated for purchase of three motor-driven combination fire wagons, one automobile patrol and automobile for use of the Chief of Fire Department.

**Johnstown, Pa.**—Purchase of auto engine is being discussed.

**Sharon, Pa.**—Purchase of auto fire truck will be recommended to Council.

**Wilkesburg, Pa.**—City Clerk will advertise for bids for purchase of automobile fire truck.

**Green Bay, Wis.**—City has decided to purchase 500 ft. of new hose for Fire Department.

#### CONTRACTS AWARDED

**Whittier, Cal.**—For erection of new city fire house, to E. M. Wheatland, at \$5,000.

**Richmond, Ind.**—To Robinson Fire Apparatus Mfg. Co., of St. Louis, Mo., for furnishing auto combination chemical engine and hose wagon, at \$5,500.

**Perth Amboy, N. J.**—By Board of Aldermen, for three-horse-drawn aerial truck for city's fire department, to American-La France Co., at \$5,700.

#### BRIDGES

**Pasadena, Cal.**—Plans have been completed for construction of four-span bridge over Arroyo Seco; estimated cost, \$200,000.

**Rome, Ga.**—Construction of bridge across Etowah is being considered.

**Cleveland, O.**—Bids will be received until 11 a.m., April 13, by John F. Goldenbogen, Clerk, for purchase of bonds in sum of \$5,692 for Lake Shore blvd. bridge.

**Cleveland, O.**—Plans for Clark ave. bridge have been adopted by city administration. It was decided that scheme known as Plan No. 1 should be worked out by City Engineer. This plan calls for erection of high level bridge over river and extending at same level to easterly limits of Cuyahoga Valley.

**Oklahoma City, Okla.**—City will vote April 2 on \$56,000 bond issue for construction of 11 bridges.

**Monessen, Pa.**—Chester & Fleming, Union Bank Bldg., of Pittsburgh, have prepared plans for reinforced concrete viaduct for Borough of Monessen 500 ft. long and 32 ft. wide. Bids will be received by Borough Council of Monessen.

**Pawtucket, R. I.**—Issuance of bonds will be considered for erection of bridges.

**Yorkville, S. C.**—York County is planning to rebuild 46 bridges.

**Dallas, Tex.**—Erection of culvert at crossing of Parry and Exposition aves., over Peak branch, is being considered.

**Farmville, Va.**—Supervisors of Prince Edward have contracted for erection of three reinforced concrete bridges, which is step forward in good roads movement. Two of these bridges are to span Sailor's Creek and other Little Buffalo at point just outside of Farmville.

**Janesville, Wis.**—Plans have been drawn by City Engineer C. V. Kerch for reinforced concrete bridge over Spring Brook on South Main st.

#### CONTRACTS AWARDED

**Little Rock, Ark.**—For concrete bridge in Oakland Cemetery, by Board of Commissioners, to Weideman & Funk.

**Pueblo, Col.**—To Ripley & Leslie, for building approaches to Orchard Grove bridge over Arkansas River, by County Commissioner. The Ripley & Leslie bid was 26½ cts. per cu. yd. for all dirt moved.

**Collinsville, Ill.**—For constructing three reinforced concrete bridges in Collinsville Township, to Joseph Klein, Freeburg, Ill.

**Collinsville, Ill.**—To Joseph Klein, Freeburg, Ill., for construction of three reinforced concrete bridges.

**Highland Park, Ill.**—By Board of Local Improvements, to Melloy Construction Co., Libertyville, Ill., at \$5,420, for construction of reinforced concrete bridge over St. John's ave.

**Waukegan, Ill.**—To Continental Bridge Co., for construction of bridge over creek at Libertyville turn on Belvidere rd. It will cost between \$1,200 and \$1,300.

**Lafayette, Ind.**—By Commissioners of Tippecanoe County, to Lafayette Engineering Co., Lafayette, Ind., for erection of two steel and reinforced concrete bridges across Wabash River, one at Davis Ferry and one at Jewett'sport, at \$45,493 and \$51,735, respectively.

**Topeka, Kan.**—For erection of 40-ft. abutment of Vassar Creek bridge, by County Board, to Topeka Bridge Co., at \$800.

**Lynn, Mass.**—For rebuilding Fox Hill bridge, between Lynn and Fox Hill, to Snare & Triest Co., 143 Liberty st., New York, at \$124,972.

**Waseca, Minn.**—By County Board of Waseca County, for repair and reconstruction of bridges, as follows: State bridges Nos. 435, 436, 437 and 438, Iblings Bridge Co., Minneapolis, Minn., \$2,864.57; State bridge No. 426, Marsh Engineering Co., Des Moines, Ia., \$1,574; State bridge No. 425 Massillon Bridge & Structural Co., Massillon, O., \$874.

**Independence, Mo.**—For constructing 45-ft. concrete arch bridge over Rock Creek, on Independence rd., to Canton Bridge Co., of Canton, O., for \$8,140.

**Kansas City, Mo.**—By Jackson County Commissioners, to Canton Bridge Co., Canton, O., at \$8,149, to construct bridge over Rock Creek on Independence rd. of reinforced concrete; 45-ft. span; length, 83 ft.; driveway, 35 ft. wide; with 5-ft. sidewalks on either side.

**Berlin, N. H.**—For furnishing and erecting superstructure of two 116-ft. single span steel bridges, to replace old iron bridges across Androscoggin River, at Mason st., to United Construction Co., 467 Broadway, Albany, N. Y., for \$14,775.

**Greensboro, N. C.**—By Guilford County Commissioners, to L. Moseley, at \$1,700, to construct two steel bridges across Reedy Fork Creek; structure will replace 80- and 30-ft. wooden bridges washed away by storm.

**Marion, O.**—By Board of Commissioners of Marion County, to Emanuel O'Brien, at \$1,062, for construction of Morris bridge.

**Watonga, Okla.**—By Board of Commissioners of Blaine County, to Canton Bridge Co., at \$2,475, for construction of two steel bridges.

**Lancaster, Pa.**—By Water Committee, for three-span plate girder bridge, to Lancaster Machine & Structural Works, of Lancaster, for \$4,176, complete and ready for traffic; also for constructing steel girder bridge over Cayuga Creek at Aurora st. is reported awarded to Corry Bridge Co., of Corry, Pa., for \$11,495.

**Lewisburg, Pa.**—For constructing steel bridge over Susquehanna River at Lewisburg, to Pennsylvania Steel Co., of Steelton, for \$65,000.

**Floresville, Tex.**—For constructing four iron bridges in county, to Missouri Valley Bridge & Iron Co., Leavenworth, Kan., at \$17,444.

**Petersburg, Va.**—For construction of new bridge across Appomattox River, to Harrison Construction Co.



**McMillin, Wash.**—For constructing 150 ft. steel bridge over south fork of Puyallup River, to Washington Engineering Co., at \$7,900.

**Shoshone, Wyo.**—By Director of U. S. Reclamation Service, to Jas. J. Burke & Co., Salt Lake City, Utah, at \$2,224, for purchasing and erecting single span steel bridge, 100 ft. long, on Shoshone Project.

#### BIDS RECEIVED

**New Brunswick, N. J.**—For building bridge over Woodbridge Creek, as follows: John F. McGovern, \$8,368.40; Hermann Bros., \$9,300; P. J. Monaghan, \$5,184.25; Meagher & Smith, \$7,705, sum of \$890 is to be deducted from bid if bridge is to be closed; J. C. Fowler Co., \$1,793; Rhodes & Maxwell for foot bridge, \$7,593. If bridge is to be closed their bid will be \$7,175.

#### MISCELLANEOUS

**Long Beach, Cal.**—City Council has ordered Board of Public Works to repair Pine ave. pier at maximum of \$2,500.

**Los Angeles, Cal.**—Specifications for concrete piles and other material to be used in construction of service wharf it is planned to build at head of the channel between Miner and Huntington concessions, have been approved by Harbor Commission. Board of Public Works will be asked to advertise for bids.

**San Francisco, Cal.**—Proposition to bond city for \$8,800,000 for purchase of land and erection of municipal buildings in proposed civic center has been carried by overwhelming majority.

**Santa Rosa, Cal.**—City Council is considering establishment of public park.

**Hartford, Conn.**—It has been decided to install six drinking fountains at various locations about city; cost about \$1,000.

**Hartford, Conn.**—Board of Street Commissioners has decided to purchase new Ford runabout.

**Gainesville, Fla.**—City offers for sale following coupon bonds, \$50,000 of issue known as public utility bonds. J. E. Webster, Secretary.

**Atlanta, Ga.**—Resolution has been introduced providing for \$1,215,000 bond issue for improvement of parks.

**Augusta, Ga.**—Mayor Barrett has announced that special meeting of City Council will be held for purpose of calling election for issuance of \$1,250,000 in bonds, instead of \$350,000 as was originally planned.

**Augusta, Ga.**—Issuance of bonds in sum of \$1,000,000 is recommended for erection of levee to keep out high water.

**Macon, Ga.**—Board of Health has asked for auto machinery for sweeping streets.

**Savannah, Ga.**—Plans are on foot for establishment of public baths.

**Springfield, Ill.**—Ordinance has been passed by City Commissioners calling for appropriation amounting to \$1,022,988.

**Marion, Ind.**—Erection of modern market building has been authorized.

**Winchester, Ky.**—Erection of new jail is being considered.

**Topeka, Kan.**—City Commissioners have set aside \$1,500 for development of Pinehurst Park.

**Salem, Mass.**—City Council has adopted order providing for appropriation of \$100,000 for purchase of site and erection of police station, district courtroom and electrical department.

**Bay City, Mich.**—Erection of city abattoir is being discussed.

**Detroit, Mich.**—Bond issue of \$200,000 is being considered for erection of incinerator plant.

**Saginaw, Mich.**—M. W. Tanner, president of Saginaw's Board of Health, has advocated garbage reduction plant for city at meeting of Board.

**Winona, Minn.**—Following condemnation of county jail County Board has secured option on two lots opposite court house on which it is proposed to build modern and substantial jail that will represent an outlay of approximately \$60,000.

**Hoboken, N. J.**—West Hoboken Playground Commission has asked Town Council for \$48,000 to acquire tract of land.

**Madison, N. J.**—Municipal system for collection and disposal of garbage will be advocated at adjourned meeting of Common Council. Recommendation from Board of Health and petition signed by citizens will bring question formally before Council.

**Newark, N. J.**—Plans for new Third Ward bath house have been approved by Board of Public Works; estimated cost, \$92,000.

**Ocean City, N. J.**—Ocean City Commissioners have decided to build public comfort station at foot of Ninth st. instead of foot of Moorlyn terrace.

**South River, N. J.**—Building of disposal plant is being considered.

**Brooklyn, N. Y.**—Plans will be prepared by Architects McKenzie, Voorhees & Gewin for new \$3,300,000 municipal building.

**Mechanicsville, N. Y.**—Village Board will advertise for bids for collection of garbage.

**Mt. Vernon, N. Y.**—Assembly bill No. 581, providing for issue of bonds to value of \$225,000, for purchase of sites and erection of police and fire buildings in Mount Vernon, which was recently passed by Legislature, has been unanimously approved.

**Rochester, N. Y.**—Meeting of Parks and Playgrounds and Finance Committees has been held in Common Council Chamber for purpose of discussing Mayor Edgerton's recommendation for bond issue of \$850,000 for improving city parks.

**Rochester, N. Y.**—Mayor recommends purchase of 90 new voting machines.

**Tarrytown, N. Y.**—James H. Wallace, of Tarrytown, is in market for portable machine for mixing tar macadam hot.

**Watertown, N. Y.**—Plans for improvements to city's jail costing less than \$3,000 will be recommended to Common Council at its next meeting by Finance Committee.

**Saranac Lake, N. Y.**—Sum of \$500 has been voted for metallic garbage wagon.

**Akron, O.**—Council has approved plans for building of public comfort station at Bowery viaduct. Contract for construc-

tion will be let soon. Station will cost about \$8,000.

**Canton, O.**—Commissioners of Stark County will submit proposition for new jail and annex to court house to voters on May 21; estimated cost, \$150,000.

**Cleveland, O.**—Cleveland people may be asked in November to pass upon question of issuing \$2,000,000 bonds to purchase all land needed to complete mall, purchase site for convention hall, auditorium and music hall and purchase property for new main library building on tract bounded by easterly mall line, St. Clair ave. north east, Rockwell ave. north east and E. Sixth st.

**Cleveland, O.**—Resolution authorizing special election May 21 on issuing of \$1,000,000 bonds for playgrounds and civic center purposes have been offered in Council by Councilman French.

**Lakewood, O.**—Bids will be received at office of B. M. Cook, Clerk, Lakewood City Hall, until 12 o'clock noon, April 15, for purchase of bonds of the city of Lakewood, O., in sum of \$16,250.

**Springfield, O.**—Ordinance has been passed under suspension of rules by City Council, authorizing issuance of \$20,000 worth of bonds for improvement of city hospital.

**Toledo, O.**—Three curative plans for evils of Swan Creek are proposed by report of special commission. Plans prepared by Engineer W. H. Sherman, are: First, complete elimination of Swan Creek and canal from city limits, at cost of \$2,000,000. Second, straightening of stream in four places, at cost of \$450,000. Third, leaving stream in its present course, but necessarily building intercepting sewer down left bank, to cost \$195,000. Commission recommends adoption of first plan, with diversion of Swan Creek into Maumee by way of Delaware Creek and canal at cut-off in Maumee. This project will cost \$2,181,485.

**Portland, Ore.**—Plans will be prepared for construction of new municipal jail building on Second and Oak sts.; cost about \$140,000.

**Erie, Pa.**—Finance Committee has decided to purchase auto patrol.

**Erie, Pa.**—Question of installing combined incinerating and reduction plant is being discussed, but committee finally decided upon installation of incinerating plant.

**Pittsburgh, Pa.**—Bids will be asked for number of auto-propelled vehicles for city work, by Director Howard B. Oursler, of the Department of Supplies, following appropriations authorized in new year's budget. Apparatus reaching approximate total of \$75,000 will be purchased.

**Pittsburgh, Pa.**—In addition to annual appropriation for maintaining parks, Council has authorized expenditure of over \$100,000 of bond money for new shelter houses and amusements.

**Pawtucket, R. I.**—Issuance of bonds will be considered for extension and improvement of public park system.

**Charleston, S. C.**—Erection of municipal bath house and swimming pool are being considered.

**Boston, Mass.**—Bids for building Section 1 of Boylston st. subway open incline and two-track subway extending from Kenmore st. to Massachusetts ave., a distance of 1,900 lin. ft.—(a) Hugh Nawn Contr. Co., 82 Savin st., Roxbury, Mass. (awarded contract); (b) Woodbury & Leighton Co., Boston; (c) Coleman Bros., Pearl and Marginal sts., Chelsea; (d) Mullen, O'Riordan & Miller, Charlestown; (e) Patrick McGovern & Metropolitan Contr. Co., Boston; (f) Rowe Contr. Co., Brighton, Mass.; (g) Bruno & Pettitt, 18 Tremont st., Boston; (h) Jos. McCabe; (i) Connors Bros. Co., Lowell; (j) Coughlan & Shells Co., 43 Tremont st., Boston; (k) W. H. Keyes & Co. 95 Milk st., Boston:

	a	b	c	d	e	f	g	h	i	j	k
Earth excavation:											
32,000 cu. yds. above el. 108.....	\$2.50	\$2.25	\$3.00	\$2.25	\$3.00	\$2.00	\$3.00	\$3.25	\$3.65	\$3.50	\$3.97
43,000 cu. yds. below el. 108.....	3.38	3.75	3.80	3.50	3.25	4.00	4.25	4.50	5.40	4.50	5.43
200 cu. yds. masonry removed.....	4.00	7.00	10.00	10.00	10.00	7.00	6.00	10.00	17.00	10.00	12.00
20,000 cu. yds. concrete masonry.....	9.50	9.00	9.00	10.00	8.50	10.00	10.00	11.00	9.50	10.25	11.00
100 cu. yds. brick masonry.....	15.00	15.00	16.00	15.00	15.00	16.00	20.00	25.00	20.00	17.00	21.00
Laying vitrified pipe:											
2,000 lin. ft. 6 to 12 in.....	0.50	0.30	0.40	0.50	1.00	0.50	1.00	0.75	1.00	0.50	0.90
900 lin. ft. 15 to 24 in.....	1.00	0.50	0.75	1.00	1.50	1.00	1.50	1.50	1.50	1.00	1.50
Setting 900 tons reinforcing rods less than 6 lbs. per lin. ft.....	6.00	12.00	8.00	12.00	12.00	8.00	20.00	30.00	15.00	12.00	15.00
Setting 75 tons structural steel more than 6 lbs. per lin. ft.....	12.00	15.00	15.00	20.00	20.00	10.00	50.00	30.00	15.00	15.00	20.00
20,000 sq. yds. cement plaster.....	0.50	0.45	0.40	0.50	0.50	0.20	0.30	0.65	0.30	0.50	0.50
Waterproofing:											
50,000 sq. yds. prep. textile and asphalt.....	0.50	0.35	0.40	0.50	0.50	0.30	0.60	0.40	0.95	0.50	0.55
50,000 sq. yds. tarred felt and pitch.....	0.30	0.25	0.25	0.50	0.30	0.25	0.30	0.40	0.30	0.35	0.35
140,000 lin. ft. spruce piles, driven and cut off.....	0.25	0.20	0.20	0.18	0.25	0.30	0.30	0.25	0.28	0.30	0.25
Underpinning:											
140 lin. ft. ± Hotel Somerset per lin. ft.....	60.00	40.00	55.00	40.00	90.00	300.00	100.00	20.00	35.00	360.00	115.00
150 lin. ft. ± other buildings per lin. ft.....	55.00	30.00	40.00	30.00	85.00	200.00	50.00	20.00	25.00	240.00	95.00
Other work and risks not covered by other items.....	3,000	25,000	1,500	5,000	7,500	100.00	5,000	12,500	5,000	10,000	7,500
2,000 sq. yds. crude paraffine applied to piles, per sq. yd.....	0.10	0.35	0.20	0.10	0.10	0.40	0.50	0.20	0.25	0.20	0.50
48-in. water pipe to lay 500 lin. ft.....	2.00	3.00	2.00	2.50	1.35	2.50	3.00	3.00	5.00	2.50	9.00
12-in. water pipe to lay 850 lin. ft.....	1.00	1.50	1.00	1.00	0.65	1.50	1.00	0.60	2.00	0.60	4.00
Totals .....	\$523,540	\$534,700	\$538,750	\$542,800	\$544,177	\$597,775	\$629,900	\$662,810	\$688,425	\$721,085	\$739,930

**Chattanooga, Tenn.**—Citizens have voted in favor of \$250,000 bond issue for park improvements.

**Galveston, Tex.**—Bids will be asked on auto truck and auto ambulance for city's **Kyle, Tex.**—City Council has appropriated \$1,000 to assist in building of city hall. Funds in addition to this aggregating \$2,000 already were in hand. An architect will be hired at once to draw plans and building will be begun at an early date.

**Hampton, Va.**—Chairman Hunter R. Booker, of Committee on Finance of City Council, has said that committee will likely recommend to Council at its April meeting establishment of garbage system for Hampton beginning May 1.

**Portsmouth, Va.**—Board of Aldermen has decided to concur in action of Common Council and authorize Police Committee to advertise for bids for installation of police telegraph and flash light system for city.

**Suffolk, Va.**—Upon recommendation of John B. Pinner, Superintendent of Finance, City Council has decided to issue \$40,000 30-year 5 per cent. bonds.

**Spokane, Wash.**—Bids will shortly be called for erection of main part of city hall.

**Wheeling, W. Va.**—Establishment of garbage disposal plant is being considered.

**Marinette, Wis.**—Project of building new City Hall is being seriously considered.

**Eacine, Wis.**—County Board has passed resolution authorizing \$165,000 bond issue with which to build new court house.

**Eacine, Wis.**—Bonds in sum of \$165,000 will be issued for erection of new Court House, and \$6,000 for erection of sanitarium.

**Sheboygan, Wis.**—Citizens and Aldermen of Fourth, Fifth and Sixth Wards are agitating establishment of parks and playgrounds on south side of city.

**Waukesha, Wis.**—At adjourned meeting of the Common Council issuance of bond issue of \$20,000 for construction and equipment of municipal hospital was approved. City Attorney was directed to draw up petitions to submit question to popular vote at spring election.

**Winnipeg, Can.**—Winnipeg portable asphalt plant will be reinforced by station-

ary equipment, and by-law to raise \$20,000 for its purchase will be submitted to the Council in a few days.

#### CONTRACTS AWARDED

**Oroville, Cal.**—For Carnegie Library, to Frank A. Sullivan, of Santa Rosa, at \$9,693. Work will be commenced at once on building, which will be located at corner of Oak and Montgomery sts.

**Shreveport, La.**—By City Council, to W. H. Werner, contract to build for \$8,487 State Fair Art Museum.

**Holyoke, Mass.**—By Board of Public Works, for season's supply of pitch, to Samuel Cabot Incorporated, of Boston, at the rate of \$12.40 per ton.

**Taunton, Mass.**—By Committee on Streets and Bridges, for new boiler for stone crusher, to Acme Road Machine Co., at \$488.

**Newark, N. J.**—By Police Board, for furnishing motorcycles and bicycles for Police Department, to Frank C. Cornish, of 279 Clinton ave., at \$285 each.

**Paterson, N. J.**—By Police and Fire Commission, for Fire Chief's gig, to W. J. Tynan, at \$2,000.

**South River, N. J.**—By Council, for construction of collecting drains at well fields, to Simpson & Tippet, of New York, at \$1,827. Other bids as follows: Wm. Matthies, of South River, \$2,470; William Kelch, of South River, \$2,200; Martus Wright, of South River, \$3,200.

**Poughkeepsie, N. Y.**—By Board of Public Works, for construction of swimming pool at Wheaton Park, to Morgan & Fiedler, at \$1,413.48. Other bids were: Charles Cooke, \$1,459, and Charles W. Crockett, Torrington, Conn., \$1,690.15.

**Hamilton, O.**—By County Commissioners, for removal of rubbish in court house, to Clem Delaney, at his bid of \$647.

**Salem, O.**—By City, for building of disposal plant, to W. H. Ralston, of Mt. Vernon.

**West Chester, Pa.**—By West Chester Council, to erect a city hall, with offices, police headquarters, etc., on South High st., to William H. Jones, for \$13,749.

**Chattanooga, Tenn.**—By Jail Commission, for erection of Hamilton County's new jail, to Van Dorn Iron Works, of Cleveland O., at cost of \$89,000.

**Richmond, Va.**—By City, to W. A.

Chesterman, for erection of new fish and vegetable market building for fish market at 17th and Franklin sts., to cost \$17,440.

#### BIDS RECEIVED

**Bridgeport, Conn.**—By Board of Contract and Supply, for trap rock supply, and if material and shipping conditions made in bid of the Clinton Point Stone Co. are satisfactory, this firm should receive contract. This concern bid 78 cts. a net ton on 1½-in. bluestone, 88 cts. on ¾-in., and 52 cts. on screenings. Besides bid of Clinton Stone Co., James Doherty & Bros. Co. bid. Its price was \$1.04 for all sizes, with delivery at the points designated by city. Average weight of the stone was 2,500 lbs. Van Keuran & Son's bid was 90 cts. a net ton on all sizes, with delivery at city dock. Average weight of this stone was 2,500 lbs. New York Trap Rock Co. placed bid of \$1.05 on 1½-in., \$1.15 on 1-in. stone, and \$1.30 on ¾-in., and \$1.05 on screenings. Average would be 2,550 lbs. per cu. yd. and delivery made at city dock. Connecticut Trap Rock Quarries bid \$1 a net ton on 1½-in., 1-in. and screenings, and \$1.20 on 1-in. size. Delivery to be made on railroad sidings. After June 1 they offered to dump rock on trolley lines and streets for \$1.20 for 1½-in., ¾-in. and screenings, and \$1.40 for 1-in. Geo. E. Sykes Co. bid \$1.05 a ton on all sizes, average weight per ton to be 2,000 lbs. For bluestone price bid was \$1.05 on 1½-in., \$1.10 on 1-in. and ¾-in., and 85 cts. on screenings. Calvin-Tomkins Co. bid was \$1 per cu. yd. for 1½-in., \$1.05 on 1-in., and 80 cts. on screenings. Average weight was 2,500 lbs. Bid of Burns Co., of this city, was \$1.80 per cu. yd. on 1½-in., \$1.85 on 1-in., and \$1.50 on screenings. Delivery to be made anywhere within 1½ miles of plant.

**Galveston, Tex.**—For construction of three ditches near Hitchcock, for drainage purposes, as follows: W. P. Brittain bid 20 cts. per cu. yd. for each of three ditches; J. C. Kelso bid 15 9-10 cts. for each ditch; J. A. Holmes, Jr., bid 20 cts. for ditch No. 1, 18 cts. for No. 2 and 16 cts. for No. 3; O. B. Acton bid 22 cts. for No. 1, 18 1/2 cts. for No. 2, and 17 cts. for No. 3. The ditches were approximately of the following cubic yard measurement: No. 1, 1,600 yds.; No. 2, 4,800 yds.; No. 3, 4,500 yds.

## TOO LATE FOR CLASSIFICATION

### BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK.	ADDRESS INQUIRIES TO
<b>STREET IMPROVEMENTS</b>				
Virginia.....	East Radford....	Apr. 5.....	Furn. 10-ton steam and gasoline road rollers, sprinkler, rock crusher, screen, etc., traction engine.....	E. F. Lawrence, Chm. Comm.
Indiana.....	Bluffton.....	Apr. 8, 1 p.m.....	Constrn. 2 gravel and 2 stone roads.....	L. A. Williamson, Aud.
Ohio.....	St. Bernard.....	Apr. 9, noon.....	Constrn. macadam road with curb and gutter.....	M. J. Zoller, Clk.
New Jersey.....	Freehold.....	Apr. 10, 11 a.m.....	Bldg. 1.7 miles gravel road.....	J. M. Corlis, Dir.
Ohio.....	Canton.....	Apr. 12, 10 a.m.....	Constrn. 7,160 yds. brick pav't.....	J. H. McConnell, County Aud.
Georgia.....	Rainbridge.....	Apr. 15, 7.30 p.m.....	Constrn. 23,000 yds. brick, wood, bitulithic or asphalt or granitoid pav't.....	J. W. Callahan, Mayor.
Indiana.....	Anderson.....	Apr. 15, 2 p.m.....	Constrn. 10 gravel roads.....	J. B. Denniel, Aud.
New York.....	Poughkeepsie.....	Apr. 18, 4 p.m.....	Constrn. 11,000 sq. yds. paving.....	R. J. Shields, Clk. Bd. Pub. Wks.
Illinois.....	Streator.....	Apr. 30.....	Constrn. pav't.....	W. W. Bean, Chm. Bd. Local Imp.
<b>SEWERAGE</b>				
Ohio.....	Ashtabula.....	Apr. 6.....	Constrn. sewer in Division street.....	M. H. Turner, Dir. Pub. Serv.
Ohio.....	Hamilton.....	Apr. 6.....	Constrn. sewer on Walnut street.....	A. J. Pater, City Clk.
New Jersey.....	Elizabeth.....	Apr. 15, 8.30 p.m.....	Constrn. 215 ft. 10-in. pipe, etc.....	W. P. Neafsey, St. Comm.
Michigan.....	Ludington.....	Apr. 20, 1.30 p.m.....	Constrn. 4,000 ft. sewer.....	D. Thompson, City Clk.
<b>WATER SUPPLY</b>				
New Jersey....	South Orange....	Apr. 15, 8 p.m.....	Furn. two 800-gal. per min. capacity pump. engs., 2 air comp. Consult. Engr.	M. Fitzsimmons, Vil. Clk.; J. J. Boyd, Consult. Engr.
New York.....	Yonkers.....	Apr. 15, 3.30 p.m.....	Constrn. 2 filters, clear water basin, pipes, etc.....	J. V. Mahony, Sec'y Bd. Contract.
Oklahoma.....	Muskogee.....	Apr. 16, 10 a.m.....	Furn gate valves.....	Chas. Wheeler, Jr., City Clk.
New York.....	Geneva.....	Apr. 18, 7.30 p.m.....	Constrn. 730 ft. 30-in. c. i. intake pipe.....	W. S. Wood, Supt.
<b>FIRE EQUIPMENT</b>				
Pennsylvania.....	Reading.....	Apr. 6.....	Furn. 500 ft. 2½-in fire hose.....	D. K. Hoch, City Compt.
Pennsylvania.....	Meadville.....	Apr. 17.....	Furn. triple combination auto fire truck.....	F. C. Kiebert, City Clk.
Montana.....	Shelby.....	May 1.....	Furn. 4,000 ft. of hose.....	City Clerk.
<b>BRIDGES</b>				
Indiana.....	Crown Point....	Apr. 8, noon.....	Constrn. bridges.....	C. A. Johnson, County Aud.
Indiana.....	Anderson.....	Apr. 15, 10 a.m.....	Constrn. concrete bridges.....	J. B. Bennet, County Aud.
Ohio.....	Cleveland.....	Apr. 17, 11 a.m.....	Constrn. bridge.....	I. F. Goldenbogen, County Clk.
Illinois.....	Chicago.....	Apr. 24, 11 a.m.....	Constrn. substructure of bridge.....	L. E. McGann, Comm. Pub. Wks.
North Dakota.....	Grand Forks....	Apr. 26.....	Constrn. bridges.....	Hans Anderson, County Aud.
<b>MISCELLANEOUS</b>				
Maryland.....	Baltimore.....	Apr. 10.....	Constrn. addition to bath house.....	Board of Awards.
North Dakota.....	Grand Forks....	Apr. 22.....	Remodel. county jail.....	County Commissioners.



## STREET IMPROVEMENTS

**Fort Pierce, Fla.**—St. Lucie County's big good roads contract will be awarded on April 9.

**Duquoin, Ill.**—Sum of \$85,000 will be spent in paving.

**Indianapolis, Ind.**—Henry W. Klausmann, City Engineer, has prepared plans and specifications for paving of Madison ave., from Pennsylvania Railroad tracks to Raymond st. Estimate cost, based on wood block paving, is \$31,408, of which it is estimated city would have to pay \$4,012 for paving street and alley intersections.

**Georgetown, Ky.**—General Council is contemplating laying about half a mile of asphalt paving on one of principal streets of city.

**Louisville, Ky.**—Petition signed by property owners and residents of Third st., between Walnut and Broadway, asking that street be reconstructed with asphalt, has been forwarded to Board of Public Works for consideration.

**Minneapolis, Minn.**—Sum of \$35,000 will be expended on curb and gutter in Northern Minneapolis.

**Minneapolis, Minn.**—Committee has ordered granite block paving on Hennepin ave., between Washington and High st., torn up and cressed block substituted.

**Stuntz, Minn.**—Extensive street improvements are planned for this year.

**Mount Vernon, Mo.**—Mount Vernon Township has opened campaign for good roads in Lawrence County by voting \$50,000 in bonds for rock system in township by vote of over three to one.

**Elizabeth, N. J.**—Steps will be taken shortly by county following final adjournment of Legislature to have Westfield, Rahway and Newark aves. repaved.

**Morristown, N. J.**—Road Committee will shortly advertise for bids for construction of three roads. Estimates show that construction of three roads, through Mountain Lakes to Boonton; from Landing to Mt. Arlington and Butler ave., Butler, will cost about \$55,000. County has appropriated \$30,000 for new thoroughfare. The one-third paid by State will add about \$18,700, and one-tenth to be paid by municipalities will add \$5,500 more, not quite enough to meet estimate.

**Passaic, N. J.**—Ordinance is being considered for permanent pavement on Bloomfield, Howe and Passaic aves., also Prospect and Garden sts.

**Passaic, N. J.**—Petition has been received asking that Richard st., between Bloomfield and Van Houten aves., be macadamized, also Terry st.

**Passaic, N. J.**—Improvement of Blaine st., from Delaware ave. to Van Houten ave., is being considered. T. R. Watson is City Clerk.

**Passaic, N. J.**—Petition has been received for opening and widening of Henry st., between Garden st. and Main ave.

**Paterson, N. J.**—County Engineer Ferguson has advised Board to appropriate \$100,000 to \$125,000 for road work this year as extensive operations are necessary.

**Carlsbad, N. M.**—Building of road across Fouss Sands on the Plains is being discussed.

**Albany, N. Y.**—By vote of 82 to 29 Assembly has passed measure of Senator Murtaugh providing for submission to people of State this fall, of proposition for issuance by State of \$50,000,000 for improvement of State and county highways.

**Lowville, N. Y.**—At special session of Board of Supervisors plans and specifications for construction of county highway, extending from Lowville town line through town of Harrisburg, to Denmark town line, were accepted, and county and town bond issue authorized to carry out specifications. Plans and specifications for building of approaches on either end of concrete arch on Dayan st., in this place, were also approved and appropriations authorized for doing work. Total length of such sections is 18-100ths of a mile, and estimated cost is \$2,173.32, State to pay 69 per cent., or \$1,499.59; county, 16 per cent., or \$347.73, and town of Lowville, 15 per cent., or \$326.

**Oneida, N. Y.**—Survey is being made of proposed State road that is to be built to Sylvan Beach, and on to North Bay and Camden. It is hoped that this road will be one of those to be built during early summer.

**Utica, N. Y.**—Voters will decide on April 9 on \$35,000 bond issue for paving of Main st.

**Bristol, Tenn.**—Sullivan County, Tenn., which embraces part of Bristol, has sold \$200,000 4½ per cent. road bonds for \$200,275 to Philadelphia house. This makes total of \$500,000 in road bonds sold by same county.

**Austin, Tex.**—Following bond issues have been approved by Acting Attorney-General for registration: Leon County road districts: No. 1, \$15,000; No. 2, \$20,000; No. 4, \$30,000; No. 5, \$11,000; No. 6, \$8,000.

**Austin, Tex.**—It is expected construction of driveway at San Jacinto Park, Houston, will begin shortly. The construction of three miles of shell road improvement will cost \$6,500.

**Corpus Christi, Tex.**—Taxpayers will vote on issuance of \$150,000 bonds for street paving.

**Dallas, Tex.**—Petition is being circulated for paving of Sycamore st.

**Fort Worth, Tex.**—Bids on Houston st. paving have been rejected by Commission and new bids on work from Belknap to Tenth have been ordered.

**Gainesville, Tex.**—Called session of County Commissioners' Court has been held and sale of \$100,000 road bonds which were issued here several years ago will soon be made. Engineer Truax is surveying roads prior to beginning work.

**Taylor, Tex.**—Mayor C. M. Still has authorized statement that immediately following annual municipal election, April 2, present City Council will order election for issue of bonds in sum of \$25,000 for purpose of paving main business streets of Taylor.

**Terrell, Tex.**—City Commission has granted petitions of citizens residing on North Pances st. and South Rockwall ave. asking that concrete sidewalks be constructed on those streets.

**Waco, Tex.**—Plan to raise \$5,000 for improving roads in McLennan County has met with general indorsement. If this sum is secured, County Commissioners will be asked to contribute \$10,000 for same purpose.

**Salt Lake City, Utah.**—Petition asking that Tenth East st. be paved, between Belmont and Herbert sts., has been filed with City Recorder. Property owners along Fifth South st., between Second East and Fifth East, filed similar petition.

**Norfolk, Va.**—Extension of Salter st. to Princess Anne ave. and setting out the adjacent wall of Cedar Grove Cemetery to line of extended street, has been reported favorably by Public Improvement Committee of City Council.

**Norfolk, Va.**—Appropriations are being considered by Council as follows: Curbing and guttering on 19th st., \$810; improving Calvert st., \$1,160; curb and gutter on 18th st., \$744.60; paving on Graydon ave., \$2,677.50.

**Seattle, Wash.**—Plans have been approved of for paving 33d ave.; estimated cost, \$25,000; for plank of south half of Grand Blvd.; estimated cost, \$1,400; concrete walks on Nickerson st., cost \$1,700, and paving of Dore Terrace, \$6,000.

## CONTRACTS AWARDED

**Elkhart, Ind.**—For street improvements as follows: 21,548 sq. yds. brick pavement on St. Joseph st. and Oakland ave., to Northern Construction Co.; 2,043 sq. yds. on E. Beardsley ave., to Andrews Asphalt Paving Co., city.

**Hammond, Ind.**—To Downey & Ports, city, for construction of Hobart, Mott and Stalbaum rds.

**Kokomo, Ind.**—By Board of Public Works, for vitrified brick paving, as follows: Morrison st., W. J. Dixon, 309 N. Buckeye st., 6,355 sq. yds., \$18,000; Morrow st., J. H. Watson, 517 N. Main st., 2,666 sq. yds., \$9,000.

**Michigan City, Ind.**—To Western Construction Co., LaFayette, Ind., at \$42,000, for paving Willard, Warren, Detroit, Wabash and Spring sts., at Michigan City. E. J. Heise is City Clerk.

**Muncie, Ind.**—By Board of Public Works, to William Burch, for construction of cement sidewalks on both sides of seven streets.

**Newport, Ind.**—By Board of Commissioners of Vermillion County, for grading, graveling, macadamizing and otherwise improving roads, to Geo. W. Sykes, Newport, and Charles Sykes, Dana, Ind., at \$10,300 and \$2,460, respectively.

**Scottsburg, Ind.**—By Board of Commissioners of Scott County, for constructing roads, as follows: J. A. Hardin, Pendleton, Ind., 2.77 miles of rock road in Vienna Township, \$19,396; W. C. Ardrey, Scottsburg, 2.515 miles gravel road in Jennings Township, \$7,450.

**South Bend, Ind.**—By Board of Public Works, for street improvements, as follows: Scott st., C. F. Deffes, city; Fellows st. and Hydraulic ave., H. N. Barnes, city. W. S. Moore is City Engineer.

**Lansing, Mich.**—To Price & Hurley, Marlon, O., at \$26,740, for laying pipe and construction of 33 manholes and six catch basins, in Ingham County.

**Petoskey, Mich.**—To Carpenter & Anderson, Grand Rapids, Mich., for paving

portions of several streets. F. D. Ely is City Clerk.

**Passaic, N. J.**—By City, for furnishing road roller, to Geiser Mfg. Co., of Trenton, N. J.

**Rochester, N. Y.**—By Board of Contract & Supply, to Nicola Desiderio, at \$6,264.50, for construction of Princeton st. bridge pavement.

**Bowling Green, O.**—By Board of Commissioners of Wood County, for grading, draining, macadamizing and otherwise improving portions of roads, as follows: Henry Sisk rd., J. A. Westrick, Holgate, O., at \$25,359.85; J. W. Turley rd., J. E. Wixson, North Baltimore, O., \$16,806.16; Samuel Stearns rd., E. T. Reed, Elmore, O., \$13,258.35; J. C. Recker and W. F. Spilker rds., W. H. Jeakle, Holdwater, \$9,390.19 and \$15,054.18, respectively.

**Toledo, O.**—By Board of Control, for paving, as follows: First, 11th and Utah sts., Patrick Watters & Son, \$4,444, \$2,376.70 and \$7,144.41, respectively; Michigan st., Collingwood ave. and Grand ave., Carpenter & Anderson, Grand Rapids, Mich., \$3,707.75, \$11,320.75 and \$7,649.25, respectively; Waite ave. (two jobs), H. P. Streicher, \$8,791.60 and \$3,195.96, respectively; Ewing and Hoag sts., Henry Sheehan, \$6,894.14 and \$17,506.84, respectively; Nessler st., Asphalt Block Paving Co., \$15,983; Central ave., Albert Gryzbowski, \$4,239.94; Delaware ave., Peters Bros., \$14,227.

**Chester, Pa.**—By City, to Dickerson Paving Co., for granolithic sidewalk work, at 16½ cts. per sq. ft., and curbing at 55 cts. per ft.

**Chester, Pa.**—For laying brick sidewalks, to A. Wilson Oliver. Bids as follows: A. Wilson Oliver, new curb and setting, 73 cts. per sq. yd.; new pavement, 68 cts. per sq. yd.; resetting old curb, 9 cts.; repairing with old brick, 12 cts.; new foundation, 24 cts.; old work with new brick, 48 cts.; grading and filling, 25 cts. J. J. Hanna, new curb, 75 cts.; new pavement, 69 cts.; resetting old curb, 10 cts.; repairing sidewalk with old brick, 9 cts.; new foundation, 28 cts.; old work relaid, 47 cts.; grading, 25 cts. William F. McAvoy, new curb, 70 cts.; new pavement, 70 cts.; resetting curb, 10 cts.; repairing sidewalks, old foundation, 35 cts.; repairing sidewalks, new foundation, 70 cts.; repairing old work with new brick, 70 cts.; grading and filling, 27 cts.

**Dallas, Tex.**—By Commissioners' Court, to W. T. Strong, for gravel to be used on Eagle Ford rd. Contract calls for delivery of gravel for distance of 5¼ miles at \$1.15 per 36 cu. ft.

**Fort Worth, Tex.**—By City, for paving West First st., to Rudolph S. Blome Co., for granitoid material.

## BIDS RECEIVED

**Janesville, Wis.**—For pavement with vitrified brick of North Main st., from Milwaukee st. to 4th ave., as follows: P. W. Ryan, excavation, 65 cts.; brick paving, per sq. yd., \$1.45; combined cement curb and gutter, 44 cts.; brick gutter, 25 cts.; stone protection curbing, 45 cts.; new foundation, 44 cts. Gund Graham & Co., excavation, 40 cts.; pavement, \$1.43; cement curb and gutter, 42 cts.; brick gutter, 10 cts.; stone curbing, 40 cts.; new foundation, 45 cts. James Cape & Sons, excavation, 60 cts.; paving, \$1.40; cement curb and gutter, 50 cts.; brick gutter, 30 cts.; stone curbing, 30 cts.; new foundation, 40 cts. Rink & Schnell, excavation, 60 cts.; paving, \$1.45; cement curb and gutter, 46 cts.; brick gutter, 12 cts.; stone curbing, 30 cts.; new foundation, 30 cts. Fred Nelson, excavation, 33 cts.; paving, \$1.43; cement curb and gutter, 56 cts.; brick gutter, 15 cts.; stone curbing, 20 cts.; new foundation, 65 cts. Christ Johnson, excavation, 45 cts.; pavement, \$1.64; cement curbing and gutter, 50 cts.; brick gutter, 35 cts.; stone curbing, 40 cts.; new foundation, 65 cts. Ed Bartlett, excavation, 55 cts.; paving, \$1.49; cement curb and gutter, 42 cts.; brick gutter, 30 cts.; stone curbing, 35 cts.; new foundation, 62 cts. G. H. Stanchfield, excavation, 55 cts.; paving, \$1.51; cement curbing and gutter, 40 cts.; brick gutter, 40 cts.; stone curbing, 36 cts.; new foundation, 60 cts. Other figures were given for paving and concreting between steam and street railway tracks.

## SEWERAGE

**New Albany, Ky.**—Board of Public Works will advertise for bids on construction of proposed sewer at Vincennes st. and Charlestown ave.

**Orange, N. J.**—Residents of New England Terrace are urging need of storm sewer to prevent serious washouts on steep grades. City Engineer Fred T. Crane was instructed to prepare plans.

**Urbana, O.**—Sewer plans have been approved by State Board of Health.

**Sherman, Tex.**—Election will be held April 27 for voting on \$40,000 bond issue. Of this amount \$7,000 is for improvement of sewerage, and \$30,000 for improvement of water system.

**Seattle, Wash.**—Plans have been approved for sewerage of 15th ave. n. e.; estimated cost, \$20,500.

#### CONTRACTS AWARDED

**Decatur, Ind.**—By Common Council, to Henry Stephens, at \$1,495, for construction of Merryman sewer. H. M. DeVoss is City Clerk.

**Muncie, Ind.**—By Board of Works, for construction of E. Washington st. sewer, to William Burch; estimated cost, \$9,850.

**Olivia, Minn.**—By Boards of Commissioners of Renville and Kandiyohi Counties, to Paul Paulson, Cottonwood, Minn., for digging and constructing judicial ditch No. 10. Estimated cost, \$1,026.80.

**Sioux Falls, S. Dak.**—By City, for construction of sewerage system for city of Sioux Falls, to Dearborn & Jackson, of Cedar Rapids, Iowa, upon their bid of \$168,730.

**Seattle, Wash.**—For construction of sewers in E. 45th st., to Hayden & Sons, at \$7,114.24, and for sewers in Fourth ave. south, to Jenkins & Jones, at \$4,650.73.

**Colfax, Wis.**—By Village Board, to Aug. P. Schoenoff, Menomonie, Wis., for construction of part of sanitary sewerage system.

**Oshkosh, Wis.**—For constructing sewers, as follows: Chris. Johnson, 75 Main st., Eighth, Sixth, Ninth sts. and Ashland ave., at \$1,450; Louis Larson, 104 Main st., Seventh st. and Burdick st.

#### WATER SUPPLY

**Elizabeth, N. J.**—Establishment of municipal water plant is being considered.

**Ballston Spa, N. Y.**—It has now been decided that meeting of taxpayers will be called to vote on bond issue of \$10,000 to install water meters in village.

**Camp Hill, Pa.**—Establishment of water and lighting plant is being considered.

**Sherman, Tex.**—Bond election in sum of \$40,000 has been ordered, date set for election being April 27. Of this amount \$30,000 is for improvement of water system and \$7,000 for improvement of sewerage.

**Chehalis, Wash.**—City Commissioners have passed third reading of gravity water ordinance to vote bonds to build system from headwaters of north fork of Newaukum to Chehalis. Sum of \$175,000 bonds will be voted.

**Sheboygan, Wis.**—Purchase of new 8,000,000-gal. pump for Sheboygan water station has been ordered by City Water Commission.

#### CONTRACTS AWARDED

**Maricopa, Cal.**—For construction of 100,000-gal. iron tank and laying about two miles of steel water pipe for West Side Water Co., to Los Angeles Manufacturing Co., of Los Angeles, Cal.

**Hartford, Conn.**—By Water Board, for 6,000 ft. of pipe for coming year, to R. D. Wood & Co., of Philadelphia, Pa., the lowest bidder, at \$22.20 a ton.

**Highland Park, Ill.**—By Board of Local Improvements, to Patrick Cawley, at \$1,498.96, for construction of 6-in. cast iron lateral main water supply pipe in Lincoln ave.

**Pittsburgh, Pa.**—By Bureau of Water, to M. O'Herron & Co., First and McKean sts., south side, at \$72,020, for construction of rising main in Mission st.

#### BIDS RECEIVED

**Saginaw, Mich.**—For two auxiliary pumps for East Side pumping station, as follows: Wilson-Snyder Mfg. Co., Pittsburgh, Pa., one No. 14 Fort Pitt horizontal cross compound condensing pumping engine, \$15,330; two No. 19 Fort Pitt horizontal compound duplex outside center packed plunger pumps, \$11,000; one No. 20 Fort Pitt horizontal duplex triple expansion outside center packed plunger pump, \$10,300. Fairbanks, Morse & Co., Beloit, Wis., two compound duplex direct acting condensing pumps, \$6,066; two of same general type, requiring live steam in low pressure cylinders for fire service, \$5,748; one triple expansion, condensing, duplex, double acting direct acting type, \$6,733. Fred M. Prescott Steam Pump Co., Milwaukee, one Prescott horizontal duplex, triple expansion, condensing pumping engine, \$8,840; one Prescott horizontal cross compound, condensing Corliss high duty pumping engine, \$11,245; Henry R. Worthington, New York, one Worthington horizontal, triple expansion, condensing pumping engine, \$7,530. The Platt Iron Works Co., Dayton, O., two compound, duplex, direct acting pumping engines, \$7,204; two of same type with

units equipped with steam end semi-Corliss type, \$7,960; one crank and fly wheel, high duty pumping engine of Corliss opposed type, \$13,075; one triple expansion direct acting type, \$8,320. The Cockburn Co., New York, one horizontal, three-cylinder, compound crank and fly wheel, condensing, high duty pumping engine, Proposal A, \$14,000; the same engine, varied to Proposal B, \$15,778. Laidlaw-Dunn-Gordon Co., Cincinnati, one Laidlaw-Dunn-Gordon cross compound, mill frame, Meyer gear pumping engine, \$7,500; one Laidlaw-Dunn-Gordon cross compound, rolling mill frame pumping engine with jacketed Corliss steam valve gear, \$9,200. All of the proposals were for 6,000,000-gallon daily capacity for single pumps bid upon and 4,000,000-gallon each for two pumps in one bid. Contract was let to the Laidlaw-Dunn-Gordon Co. for one 6,000,000-gallon pumping engine at \$7,500. R. F. Johnson is Superintendent.

**Yonkers, N. Y.**—For 10,000,000-gallon pump. Seven bids were received. One was from Hamilton, O., another from Pittsburgh, and third from Milwaukee. Progress Mfg. Co. asked \$27,500 for one, \$28,275 for a second, and \$35,370 for a third. The International Steam Pump Co. asked \$19,500 and \$21,000. The Hoovens Owen Rentschler Co. asked \$23,600, the Allis-Chalmers Co. \$22,490, the Epping Carpenter Co. \$19,500 and \$21,500, the Platt Iron Works Co. \$25,360, and the Wilson Snyder Co. \$22,500.

#### LIGHTING AND POWER

**Hartford City, Ind.**—Plans are being made for installation of cluster lighting system about public square.

**Montgomery, Mo.**—Montgomery City electric light plant has been sold to E. H. Alger, of Jonesburg, Mo. It was said deal was consummated on basis of \$14,000. City Council recently granted a 20-year franchise to this enterprise.

**Albany, N. Y.**—Public Service Commission, Second District, has authorized Patchogue Electric Light Co. to exercise franchises in town of Southampton, Suffolk County, for furnishing of electricity in that part of town of Southampton west of Speonk River and south of line north of and parallel with Old Country rd.

**Kernersville, N. C.**—Election will be held April 9 to decide whether town shall issue \$5,000 worth of bonds for electric light plant.

**Camp Hill, Pa.**—Establishment of lighting and water plant is being considered.

**Portsmouth, Va.**—Installation of new lighting system is being discussed.

**Niagara Falls, Ont.**—Queen Victoria Park Commissioners will hold meeting within next two weeks, and on that occasion project for illumination of cataract will be considered.

#### CONTRACT AWARDED

**Chester, Pa.**—For lighting City Hall by electricity, to Beacon Light Co., at its bid \$400 per year.

#### BIDS RECEIVED

**Hartford City, Ind.**—For furnishing two 100 horse power boilers, including removal of present boilers, etc., as follows: Hawkes Boiler Co., Chicago, Ill., \$3,760; Bryce Heating & Ventilating Co., Toledo, O., \$4,787; the McNeill Boiler Mfg. Co., Toledo, O., \$3,800; A. D. Granger & Co., New York, \$5,350.

#### FIRE EQUIPMENT

**Sunnyvale, Cal.**—Purchase of 500 ft. of new hose is being considered.

**Denver, Col.**—New fire station that will give protection to Park Hill will be built in city park, at corner of Colorado blvd. and 22d ave.

**Macon, Ga.**—City Council will be asked by Alderman McKenna to install 20 additional fire alarm boxes in various parts of city.

**Des Moines, Ia.**—Purchase of auto truck for Fire Department is being considered.

**Wichita, Kan.**—Installation of complete electric fire alarm system is being considered.

**Arlington, Mass.**—Triple combination motor pump, chemical and hose car will be purchased.

**Boston, Mass.**—Purchase of motor apparatus to cost \$50,000 is recommended.

**Chelsea, Mass.**—Purchase of motor squad car and motor combination chemical and ladder truck is recommended by Chief D. M. Hudson.

**Grand Island, Neb.**—Auto fire truck may be purchased for Fire Department.

**Irrington, N. J.**—Bids will be received at office of Town Clerk, Town Hall, Irrington, on or before Monday, April 15, at 8 o'clock p.m., for purchase of \$14,000 worth of fire house bonds. M. Stockman, Clerk.

**Long Branch, N. J.**—Purchase of two motor fire engines is under consideration.

**Faulsboro, N. J.**—New fire alarm system will be installed.

**Ferth Amboy, N. J.**—City is considering purchase of horse-drawn aerial ladder truck, at cost of \$5,000.

**Pitman, N. J.**—City may purchase combination hose and chemical wagon.

**Babylon, L. I., N. Y.**—Appropriation of \$5,000 is being considered for purchase of new fire apparatus.

**Riskill Landing, N. Y.**—Purchase of new fire equipment has been authorized.

**Meadville, Pa.**—Purchase of motor combination pumper and hose car has been decided.

**Newcastle, Pa.**—Purchase of four auto fire trucks has been recommended.

**Columbus, Tenn.**—Automobile combination fire wagon, to cost \$5,000, will be purchased.

**De Pere, Wis.**—Town Council will shortly let contract for 500 ft. of new hose.

**London, Can.**—Appropriation of \$17,000 will probably be made for purchase of new fire apparatus.

#### CONTRACTS AWARDED

**Sacramento, Cal.**—By City, to Seagrave Co., of Columbus, O., for furnishing two automobile chemical engines, at \$11,500.

**Chicago, Ill.**—By Fire Department, to United States Tire Co., for all solid rubber tires used on their fire apparatus, both horse-drawn and motor-driven, for year ending Dec. 31, 1912.

**Northampton, Mass.**—For furnishing auto chemical engine, to Pope Manufacturing Co., at \$2,000.

**Duluth, Minn.**—By City, for construction of new fire hall at Seventh ave., East and Ninth st., to Hugh Fawcett, at \$8,820.

**Eveleth, Minn.**—For storage battery system for Fire Department, as follows: Gamewell Fire Alarm Telegraph Co., Chicago, \$530 and \$613; Star Electric Co., Binghamton, N. Y., \$395.

**Ferh Amboy, N. J.**—By Committee on Fire, for hook and ladder trucks, to American-La France Fire Engine Co., at \$5,700.

**Islip, L. I., N. Y.**—For building of Islip fire headquarters, to W. S. Velsor, of Islip, at \$11,000.

**Connellsville, Pa.**—By City, to Pope-Hartford Automobile Co., for auto fire truck, at \$5,750.

**Naticoke, Pa.**—To American-La France Fire Engine Co., for furnishing chemical engine.

#### BIDS RECEIVED

**Marshalltown, Ia.**—For furnishing automobile combination hose wagon, as follows: Kissel Kar Co., \$4,950; the Seagrave Co., Columbus, O., \$4,975; American-La France Fire Engine Co., Elmira, N. Y., \$5,500; Webb Motor Fire Apparatus Co., St. Louis, Mo., \$5,250; Robinson Fire Apparatus Mfg. Co., St. Louis, Mo., \$5,500; Pope-Hartford Co., \$5,500.

**Jersey City, N. J.**—For furnishing of seven-passenger automobile for use of board. There were three bidders, the Junction Motor Co., which agrees to furnish a Cutting car for \$2,450; the Crescent Automobile Co., which offers a Cadillac model for \$3,185, and the Hudson Motor & Garage Co., which will supply a Chalmers-Detroit for \$2,598.28.

**Paterson, N. J.**—For erection of No. 12 engine house in Clinton st., as follows: Mason and Iron work—Nicholas Tanis, general, \$11,105; rock excavation, cu. yd., \$6; extra concrete, yd., \$8. Abram Ver Duin, general, \$11,600; rock excavation, yd., \$3; extra concrete, yd., \$8. Jacob H. Steele, general, \$9,800; rock excavation, yd., \$4; extra concrete, yd., \$7. William Platt Construction Co., general, \$11,855; rock excavation, yd., \$8; extra concrete, yd., \$7. A. Gleek & Son, general, \$11,520; rock excavation, yd., \$3.50; extra concrete, yd., \$6. Felix Pittet, general, \$12,200; rock excavation, yd., \$8; extra concrete, yd., \$9. W. H. H. Van Houten, general, \$10,217; rock excavation, yd., \$3.50; extra concrete, yd., \$6.50. Carpenter and painting work—P. S. Van Kirk Co., \$2,400; P. J. Rodgers, \$2,980; John Vroom & Co., \$3,048; James A. Black, \$2,493; Reliable Building Co., \$2,897; L. M. Breen Building Co., \$2,895; Leonard Breen Building Co., \$3,183. Plumbing, roofing and heating work—James T. Cox, \$1,927; A. J. Rogers Co., \$1,716; Frank A. McBride, \$1,748; Isaac A. Storms, \$2,142; James Kearney & Sons, \$1,898. Electric wiring and bell work—Watson-Flagg Engineering Co., \$360; Bennett & Brown, \$546.

**Lakewood, O.**—For furnishing automobile combination pumping engine and hose wagon, as follows: American-La France Fire Engine Co., Elmira, N. Y.,